

June 23, 2021

Ms. Kelly Lee Kinkaid PG; Licensed Professional Geologist
Pennsylvania Department of Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 2nd Quarter 2021

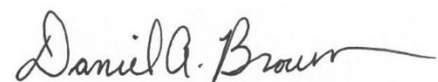
Dear Ms. Kinkaid:

Enclosed are the Form 19 reports for the sampling period completed at the above referenced facility. The laboratory results are being reviewed by ARM Group to evaluate the quality of the data and historic trends. This review will be submitted upon completion.

- This sampling event was for the "Annual" Form 19 parameters, all the thirteen (13) GWMP locations were sampled.
- Enclosed is a data export .csv file that should be in the format compatible with your LandLinks software.

Please do not hesitate in contacting me if you have any questions or concerns at dbrown@lcswma.org.

Respectfully Submitted,

A handwritten signature in black ink that reads "Daniel A. Brown". The signature is fluid and cursive, with a long horizontal stroke at the end.

Daniel A. Brown
Environmental Compliance Manager

cc: LCSWMA: Environmental
ARM Group: Ryan Brandon
PA DEP: Randy Weiss



ARM Group LLC

Engineers and Scientists

February 11, 2022

Mr. Daniel Brown
Environmental Compliance Manager
Lancaster County Solid Waste
Management Authority
1299 Harrisburg Pike
PO Box 4425
Lancaster, PA 17604

Re: LCSWMA Creswell Landfill
Permit No. 100008
Manor Township, Lancaster County, Pennsylvania
Second Quarter 2021 Water Quality Data Review
ARM Project 190848

Dear Mr. Brown:

ARM Group LLC (ARM) has prepared this assessment at the request of the Lancaster County Solid Waste Management Authority (LCSWMA) to provide an evaluation of the Second Quarter 2021 water quality monitoring results for Creswell Landfill (CWLF). As part of this evaluation, ARM reviewed the historic and Second Quarter 2021 laboratory analytical results for the sampled upgradient and downgradient Form 19 groundwater monitoring wells and surface water monitoring points.

The groundwater and surface water samples collected by LCSWMA during the Second Quarter 2021 were analyzed for quarterly, annual, and Subtitle D Form 19 parameters. The following narrative provides a summary of noteworthy observations of the results for the Second Quarter 2021, as well as a general discussion of recent data trends.

Background/Upgradient Parameter Concentrations

To determine if the concentration of a given parameter at each monitoring location is elevated compared to the background/upgradient concentration, ARM calculated the 95% upper prediction limits (UPLs) using historical data from the upgradient well, CWMP001W, using laboratory analytical results from the Fourth Quarter 1987 through the most recent quarter (Second Quarter 2021).

The UPL approach is used to predict the upper limit of possible future values based on a background data set. A 95% UPL established from background data represents the upper limit which will predict if an independently obtained future sample result exceeds background levels with 95% confidence. If the concentration of a given parameter in a downgradient well exceeds its established UPL, this represents a statistically significant exceedance of background groundwater quality.

To calculate the UPLs, ARM first applied the Rosner's Test for outliers in ChemStat® statistical analysis software (version 6.3.0.2, Starpoint Software, Inc., ©1996-2013) to identify potential historical anomalous concentrations in MP-1. ARM previously identified 82 statistical outliers at a 95% significance level in the historical dataset which did not appear to be part of a long-term concentration trend. No statistical outliers were identified in the Second Quarter 2021 results.

The most appropriate method of calculating a UPL varies according to the distribution of each dataset. After removing outliers, ARM assessed the remaining historical MP-1 concentration data for each parameter to determine the best fitting statistical distribution (i.e., normal, lognormal, gamma or no distribution) at a 95% significance level using the EPA's ProUCL statistical analysis software (version 5.1.002, EPA, 2015). ARM then used ProUCL to calculate the UPLs for each parameter, which are summarized in the enclosed **Attachment 1**. The exported ProUCL statistical calculation sheets are included in the enclosed **Attachment 2**.

For pH, a one-sided UPL is not appropriate because of the double-sided nature of this parameter. ARM assessed the downgradient pH data by investigating time-series concentration plots for identifiable trends and comparing the Second Quarter 2021 results to the historical range of concentrations in both the sampled well and the upgradient well.

The Interstate Technology and Regulatory Council (ITRC) recommends that a UPL should only be applied for background populations of at least 8-10 observations. Use of smaller populations containing either fewer measurements or multiple non-detections can result in skewed datasets and statistically flawed UPL calculations. In these cases, ARM substituted the laboratory reporting detection limit for the statistical background standard.

The attached **Table 1** summarizes the background exceedances in the downgradient wells during the Second Quarter 2021. Background exceedances shown in **Table 1** denote either (1) a statistically significant increase of concentrations relative to those observed historically in the upgradient well MP-1, or (2) a detection of a parameter for which a statistically valid background standard could not be calculated. Close attention should be paid to results from the monitoring locations with noted water quality changes during future sampling events to evaluate the presence of any positive or negative trends for the parameters of concern.



Individual Well Summary

- **MP-1** – MP-1 is the upgradient well from which the statistical background standards are calculated. Sulfate was observed above statistical background levels in the Second Quarter 2021 results. Sulfate concentrations appear stable over time apart from short-term fluctuations. Nickel was detected in the Second Quarter 2021 but does not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Nickel concentrations appear to be stable over time. pH appears to have a slightly increasing long-term trend.
- **MP-2** – Parameters noted above background in this well include alkalinity (bicarbonate and total), calcium (total and dissolved [t,d]), chloride, dissolved iron, magnesium (t/d), manganese (t/d), sodium (total and dissolved), specific conductance (SPC; field and lab [f,l]), sulfate, total dissolved solids (TDS), total organic carbon (TOC). Many of these parameters appear to be slowly increasing over time, with exception of calcium which appears to be decreasing. Additionally, 1,1-dichloroethane; dissolved lead; chlorobenzene; chloroethane; 1,4-dichlorobenzene; and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Chloroethane concentrations appear to be increasing since 2018. Concentrations of all other noted parameters appear to be either stable over time or fluctuating with no apparent long-term increasing or decreasing trends. VOC trend plots are included in **Attachment 3**.
- pH appears to mimic the trend observed in the upgradient well at levels approximately 0.45 unit higher, on average, while fluctuating over a slightly wider range.
- **MP-3** – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), chloride, sodium (t/d), and SPC (l). Concentrations of all noted parameters generally appear to be stable or decreasing since 2018. The exception is Sodium which seems to be slightly decreasing with some minor spikes. Additionally, 1,1-dichloroethane and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. 1,1-dichloroethane concentrations appear to be decreasing over time, and nickel concentrations appear to be stable. VOC trend plots are included in **Attachment 3**.
- pH appears to mimic the trend observed in the upgradient well at levels approximately 0.30 unit higher, on average.
- **MP-4** – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), chloride, and sulfate. Concentrations of all noted parameters appear to be increasing slowly over time with short-term fluctuations except for ammonia-N which appears to have a stable long-term trend within its range of fluctuations.
- pH appears to be slightly decreasing over time with a long-term average value approximately 0.60 unit higher than background.



- MP-5 – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), chloride, sodium (t/d), and SPC (f/l). Alkalinity and sulfate concentrations appear to be slowly increasing over time. Concentrations of the other noted parameters appear to be either stable or decreasing, apart from short-term fluctuations, since approximately 2010.

Additionally, nickel was detected but does not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Nickel concentrations appear to be stable over time.

pH appears to be stable over time with a long-term average value approximately 0.22 unit higher than background.
- MP-7 – Parameters noted above background in this well include alkalinity (bicarbonate and total), chloride, sodium (t/d), SPC (f/l), and sulfate. Alkalinity and sulfate concentrations appear to be increasing over time with short-term fluctuations. Chloride, sodium, and SPC concentrations appear to be either stable or decreasing since approximately 2009.

Additionally, nickel was detected but does not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Nickel detections are infrequent, but concentrations appear to be decreasing over time.

pH appears to be stable over time with a long-term average value approximately 0.20 unit higher than background.
- MP-8 – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), chemical oxygen demand (COD), iron (t/d), magnesium (t/d), manganese (t/d), potassium (t/d), sodium (t/d), SPC (f/l), sulfate, TDS, and TOC. Ammonia-N concentrations appear to be slowly increasing since approximately 2010. Concentrations of the other noted parameters appear to be stable or decreasing over time, apart from short-term fluctuations.

Additionally, benzene, 1,1-dichloroethane; dissolved lead; chlorobenzene; chloroethane; 1,2-dichlorobenzene; 1,4-dichlorobenzene; dichlorodifluoromethane; cobalt; and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Dissolved lead detections are infrequent, but concentrations appear to be decreasing over time. Cobalt and nickel concentrations appear to be stable over time. All noted VOCs appear to be either stable or decreasing over time. VOC trend plots are included in **Attachment 3**.

pH appears to mimic the trend observed in the upgradient well at levels approximately 0.77 unit higher, on average, while fluctuating over a slightly narrower range.
- MP-9 – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), barium (t/d), calcium (t/d), COD, chloride, iron (t/d), magnesium



(t/d), manganese (t/d), potassium (t/d), sodium (t/d), SPC (f/l), sulfate, TDS, and TOC. All parameters noted above background appear to be increasing over time except alkalinity, which appears to be stable over time, apart from short-term fluctuations. Additionally, benzene, 1,1-dichloroethane, arsenic (t/d); dissolved lead; chlorobenzene; chloroethane; 1,2-dichlorobenzene; 1,4-dichlorobenzene; cobalt; and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Arsenic, cobalt, and nickel concentrations appear to be stable over time. Dissolved lead was detected for the first time in the Second Quarter 2021 and, therefore, no trend is noted. All noted VOCs appear to be either stable or decreasing over time. VOC trend plots are included in **Attachment 3**.

pH appears to be slightly decreasing over time with a long-term average value approximately 0.92 unit higher than background.

- **MP-10** – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), chloride, magnesium (t/d), potassium (t/d), sodium (t/d), SPC (f/l), sulfate, TDS, and TOC. Ammonia-N and TOC concentrations appear to be decreasing over time. Concentrations of all other noted parameters appear to have a stable long-term trend while fluctuating across relatively wide ranges.

Additionally, total chromium, total copper, dissolved lead, and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Chromium and copper concentrations appear to be decreasing over time. Nickel detections concentrations appear to be stable over time. Dissolved lead was detected for the first time in the Second Quarter 2021 and, therefore, no trend is noted.

pH appears to mimic the trend observed in the upgradient well at levels approximately 1.27 units higher, on average.

- **MP-12** – Parameters noted above background in this well include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), chloride, iron (t/d), manganese (t/d), SPC (f/l), sulfate, TOC, and turbidity. Turbidity levels appear to be fluctuating rapidly between approximately 1-1,300 NTU since 2013. Iron and TOC concentrations appear to have stable long-term trends but fluctuate across relatively wide ranges. Manganese concentrations appear to be decreasing over time. Concentrations of all other noted parameters appear to be stable over time apart from short-term fluctuations.

Additionally, total arsenic and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Arsenic detections are infrequent, but concentrations appear to be decreasing over time. Nickel concentrations appear to be stable over time.

pH appears to mimic the trend observed in the upgradient well at levels approximately 0.68 units higher, on average.



- MP-16** – Parameters noted above background in this well include ammonia-N, sulfate, and total alkalinity. Concentrations of all noted parameters appear to be either stable or decreasing over time.

Additionally, dissolved lead and cobalt were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Dissolved lead was detected for the first time in the Second Quarter 2021 and, therefore, no trend is noted. Cobalt concentrations appear to be stable over time.

pH appears to mimic the trend observed in the upgradient well at levels approximately 0.67 units higher, on average.
- MP-17S** – Surface-water grab samples are taken from Mann's Run at this location and analyzed for Form 19 parameters. Because of its upstream location relative to the majority of CWLF, this sampling point should also be interpreted, to some extent, as a background evaluation point for evaluating downstream conditions in Mann's Run (i.e., at MP-18S).

Parameters noted above background at MP-17S include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), COD, chloride, iron (d), magnesium (t/d), nitrate-N, potassium (t/d), sodium (t/d), SPC (f/l), sulfate, TDS, TOC, and total lead. Lead was detected for the first time in the Second Quarter 2021 and, therefore, no trend is noted. COD and TOC concentrations appear to be decreasing over time, while concentrations of the other noted parameters appear to be increasing over time and fluctuating across a relatively wide range of values. The observed sodium concentration (4,160 mg/L) appears to be anomalous based on the observed historical range of values. ARM will assess future results to determine the nature of this observation.

Additionally, copper (t/d), dissolved lead, and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Dissolved lead was detected for the first time in the Second Quarter 2021 and, therefore, no trend is noted. Copper and nickel concentrations appear to be stable over time.

pH appears to mimic the trend observed in the upgradient well at levels approximately 2.01 units higher, on average, while fluctuating over a slightly wider range.
- MP-18S** – Surface-water grab samples are taken from Mann's Run at this downstream location and analyzed for Form 19 parameters. Parameters noted above background at MP-18S include ammonia-N, alkalinity (bicarbonate and total), calcium (t/d), COD, chloride, magnesium (t/d), potassium (t/d), sodium (t/d), SPC (f/l), sulfate, TDS, TOC, and total lead. Ammonia-N and COD concentrations appear to be decreasing over time, and TOC concentrations appear to be stable over time. Concentrations of the other noted parameters appear to be increasing over time and fluctuating across a relatively wide range of values. The observed sodium concentration (2,680 mg/L) appears to be anomalous based on the observed historical range of values. ARM will assess future results to determine the nature of this observation.



Additionally, copper (t/d) and nickel were detected but do not meet the criteria for calculating a statistical background standard due to a lack of historical upgradient detections. Copper and nickel concentrations appear to be stable over time.

pH appears to mimic the trend observed in the upgradient well at levels approximately 2.47 units higher, on average. In general, the water quality observed at MP-18S appears similar to the historical observations from MP-17S.

Trend plots for the detected VOCs noted above (benzene; 1,1-dichloroethane; chlorobenzene; chloroethane; 1,2-dichlorobenzene; and dichlorofluoromethane) are included in **Attachment 3**. Parameters not noted above are either at or below statistical background levels.

Overall, the groundwater quality at CWLF appears to be improving, especially with respect to VOC concentrations. Some metal and ion concentrations (e.g., calcium, sodium, and chloride) appear to be increasing slowly in some wells over time, but these water quality changes are generally gradual with the exception of a few abrupt increases. These increases may be the result of temporary changes and do not currently appear to be a cause for concern.

Trip and Field Blank Analyses

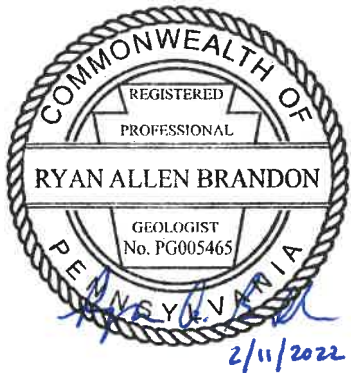
One (1) trip blank sample and one (1) field blank sample were received by the laboratory on April 19, 2021. Both blank samples were analyzed for VOCs only. Laboratory analyses were completed on April 22, 2021. No VOCs were detected in either blank sample, and all surrogate recoveries were within acceptable ranges.

Additionally, one (1) trip blank sample and one (1) field blank sample were received by the laboratory on April 22, 2021. Both blank samples were analyzed for VOCs. The field blank was also analyzed for wet chemistry and metal parameters. Laboratory analyses were completed between April 26, 2021 and May 12, 2021. In the field blank sample, SpC was detected at 2 µmhos/cm and pH at 5.65 units. The following metals were also detected in the field blank sample: total iron (0.058 mg/L), total lead (0.0022 mg/L) and dissolved lead (0.0039 mg/L). No VOCs were detected in either blank sample, and all surrogate recoveries were within acceptable ranges.



Closing

If you have any questions[†] regarding this water quality data evaluation, please contact the undersigned at 717-533-8600. ARM appreciates the opportunity to assist LCSWMA with its assessment of quarterly water quality data collected at CWLF.



Sincerely,
ARM Group LLC

Gillian Green

Gillian Green
Staff Geologist

Ryan A. Brandon

Ryan A. Brandon, P.G.
Project Manager

Enclosed: Table 1
Attachments 1-3





A R M G r o u n d L L C

TABLE

Table 1. LCSWMA Creswell Landfill Form 19 Groundwater Monitoring Well Background Standard Comparisons - 2nd Quarter 2021

Parameter	Background Standard	Units	CWMP001W	CWMP002W	CWMP003W	CWMP004W	CWMP005W	CWMP007W	CWMP008W	CWMP009W	CWMP010W	CWMP012W	CWMP016W	CWMP017S	CWMP018S
Quarterly Analytes															
AMMONIA-NITROGEN	0.120	µg/L	< 0.100	0.116	0.220	0.151	0.159	< 0.100	5.61	29.4	0.157	0.126	0.171	0.149	0.222
BICARBONATE	8	µg/L	7	106	22	31	17	18	417	558	161	75	8	651	328
CALCIUM, TOTAL	20.0	µg/L	14.3	46.1	20.1	18.1	14.6	17.5	60.6	142	22.9	29.9	5.7	53.4	58.6
CALCIUM, DISSOLVED	19.2	µg/L	14.5	45.1	20.4	18.1	14.8	18	57.3	147	22.7	30.5	5.7	53.2	57.7
COD (CHEMICAL OXYGEN DEMAND)	12**	µg/L	< 15	< 15	< 15	< 15	< 15	< 15	44	121	< 15	< 15	< 15	18	27
CHLORIDE	32.6	mg/L	26.6	102	59.5	44.6	59.5	60.0	30.8	560	103	36.0	3.8	639	439
FLUORIDE	0.20*	mg/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.50	< 0.50
IRON, TOTAL	3.5	µg/L	0.45	0.49	0.079	< 0.056	0.27	< 0.056	24.3	37.1	0.22	82.5	0.23	0.41	0.12
IRON, DISSOLVED	0.13	mg/L	< 0.056	0.20	< 0.056	< 0.056	< 0.056	0.15	21.9	32.8	< 0.056	0.2	< 0.056	0.24	0.07
MAGNESIUM, TOTAL	12.5	mg/L	10.0	14.9	7.4	6.2	7.5	9.4	28.1	78	21.7	8.5	1.7	102	65.3
MAGNESIUM, DISSOLVED	12.4	mg/L	10.1	15.3	7.7	6.3	7.6	9.3	26.4	74.2	20.8	8.8	1.4	94.5	59.4
MANGANESE, TOTAL	0.12	µg/L	0.049	0.94	0.0066	0.0080	0.054	0.0064	15.5	11.6	0.10	0.26	0.0093	0.040	0.0084
MANGANESE, DISSOLVED	0.13	mg/L	0.048	0.90	< 0.0056	0.0079	0.052	0.0077	13.6	10.8	0.0093	0.27	0.0077	0.037	< 0.0056
NITRATE-NITROGEN	23.5	µg/L	18.0	4.4	7.3	5.7	7.5	9.2	< 0.20	< 0.20	6.1	7.8	2.9	25.4	18.6
pH-FIELD	None***	mg/L	5.22	5.18	5.14	5.46	5.10	5.03	6.22	6.20	6.75	5.34	5.24	8.07	8.61
pH-LAB	None***	mg/L	5.90	6.70	6.83	6.82	6.16	6.08	6.53	6.51	7.31	7.31	6.45	8.32	8.55
POTASSIUM, TOTAL	2.9	mg/L	2.2	2.6	1.4	1.2	2.2	2.2	7.7	32.8	4.3	1.2	0.51	12.9	18.3
POTASSIUM, DISSOLVED	3.1	mg/L	2.2	2.7	1.5	1.2	2.2	2.2	7.4	32.1	4.4	1.5	0.46	12.1	17.2
SODIUM, TOTAL	15.6	µg/L	12.6	27.4	18.1	14.8	30.5	31.5	32.3	189	75.1	13.0	3.4	4,160	2,680
SODIUM, DISSOLVED	15.1	mg/L	12.9	27.7	18.5	14.7	30.1	31.8	29.6	169	70.9	13.9	3.2	405	269
SPEC. COND., FIELD	327	mg/L	273	544	306	252	339	388	1,149	4,035	1,060	337	100	4,339	2,852
SPEC. COND., LAB	300	mg/L	263	583	320	268	329	372	760	2,720	665	324	72	2,870	2,000
SULFATE	2.9	µmho/cm	3.9	21.9	4.8	5.6	4.9	15.1	7.0	6.1	23.8	5.3	9.7	79.7	33.6
ALKALINITY	7	µmho/cm	7	106	22	31	17	18	417	558	161	75	8	651	349
TDS (TOTAL DISSOLVED SOLIDS)	261	mg/L	166	354	236	202	168	218	398	1,510	374	226	74	1,640	1,130
TOC (TOTAL ORGANIC CARBON)	1.1	mg/L	0.56	4.3	0.63	0.74	< 0.50	< 0.50	7.0	35.7	2.7	2.5	0.61	4.4	7.6
TOTAL PHENOLICS	0.005*	µg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TURBIDITY	168	mg/L	16.5	0.17	0.22	< 0.10	6.87	< 0.10	25.7	58.6	2.90	287	1.46	1.04	0.98
BENZENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.6	2.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-DIBROMOETHANE (EDB) (ETHYLENE DIBROMIDE)	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-DICHLOROETHANE	1.0*	µg/L	< 1.0	11.5	1.5	< 1.0	< 1.0	< 1.0	2.5	1.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-DICHLOROETHENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-DICHLOROETHANE	1.0*	NTU	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-DICHLOROETHENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans 1,2-DICHLOROETHENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ETHYLBENZENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
METHYLENE CHLORIDE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TETRACHLOROETHENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TOLUENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-TRICHLOROETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TRICHLOROETHENE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VINYL CHLORIDE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
XYLENES (TOTAL)	3.0*	µg/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

Notes:

Gray text indicates a parameter non-detection.

Shaded text indicates a background standard exceedance.

* Reporting limit substituted for background standard due to lack of historical detections in the upgradient well.

Table 1. LCSWMA Creswell Landfill Form 19 Groundwater Monitoring Well Background Standard Comparisons - 2nd Quarter 2021

Parameter	Background Standard	Units	CWMP001W	CWMP002W	CWMP003W	CWMP004W	CWMP005W	CWMP007W	CWMP008W	CWMP009W	CWMP010W	CWMP012W	CWMP016W	CWMP017S	CWMP018S
Annual Analytes															
ARSENIC, TOTAL	0.0033*	mg/L	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	0.0039	< 0.0033	0.0044	< 0.0033	< 0.0033	< 0.0033
ARSENIC, DISSOLVED	0.0030*	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0036	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
BARIUM, TOTAL	0.17	mg/L	0.078	0.045	0.017	0.022	0.049	0.050	0.13	0.75	0.026	0.092	0.011	0.028	0.044
BARIUM, DISSOLVED	0.19	mg/L	0.080	0.045	0.017	0.022	0.048	0.051	0.12	0.80	0.024	0.070	0.011	0.029	0.042
CADMIUM, TOTAL	0.0011*	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011
CADMIUM, DISSOLVED	0.0011*	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011
CHROMIUM, TOTAL	0.0022*	mg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	0.0057	< 0.0022	< 0.0022	< 0.0022	< 0.0022
CHROMIUM, DISSOLVED	0.0022*	mg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022
COPPER, TOTAL	0.0056*	mg/L	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	0.0071	< 0.0056	< 0.0056	0.023	0.011
COPPER, DISSOLVED	0.0056*	mg/L	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	0.019	0.0099
LEAD-FLAMELESS, TOTAL	0.043	mg/L	0.0024	< 0.0022	< 0.0022	< 0.0022	0.0034	< 0.0022	0.031	0.015	0.017	< 0.0022	< 0.0022	0.11	< 0.0022
LEAD, DISSOLVED	0.0022*	mg/L	< 0.0022	0.0039	< 0.0022	< 0.0022	< 0.0022	< 0.0022	0.0026	0.0040	0.0033	< 0.0022	0.0025	0.0035	< 0.0022
MERCURY, TOTAL	0.00050*	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
MERCURY, DISSOLVED	0.00050*	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
SELENIUM, TOTAL	0.0056*	µmho/cm	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056
SELENIUM, DISSOLVED	0.0056*	µmho/cm	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056
SILVER, TOTAL	0.0022*	mg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022
SILVER, DISSOLVED	0.0022*	mg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022
ZINC, TOTAL	0.12	mg/L	0.019	0.0079	< 0.0056	< 0.0056	0.010	0.0079	< 0.0056	< 0.0056	< 0.0056	0.0087	< 0.0056	0.094	0.024
ZINC, DISSOLVED	0.18	mg/L	0.018	0.0078	0.0057	< 0.0056	0.010	0.0067	< 0.0056	< 0.0056	< 0.0056	0.0059	< 0.0056	0.090	0.025
BROMOFORM	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0
BROMOMETHANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CARBON TETRACHLORIDE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CHLOROBENZENE	1.0*	µg/L	< 1.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0	8.1	21.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CHLOROETHANE	1.0*	NTU	< 1.0	72.9	< 1.0	< 1.0	< 1.0	< 1.0	5.7	11.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
DIBROMOCHLOROMETHANE (CHLORODIBROMOMETHANE)	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CHLOROMETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
3-CHLORO-1-PROPENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-DICHLOROBENZENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0	2.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-DICHLOROBENZENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-DICHLOROBENZENE	1.0*	µg/L	< 1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0	10.6	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
DICHLORODIFLUOROMETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-DICHLOROPROPANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,3-DICHLOROPROPENE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans 1,3-DICHLOROPROPENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-BUTANONE (MEK)	10.0*	mg/L	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-METHYL-2-PENTANONE (MIBK)	5.0*	mg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1,2-TETRACHLOROETHANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-TETRACHLOROETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-TRICHLOROETHANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TRICHLOROFLUOROMETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-TRICHLOROPROPANE	1.0*	mg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Notes:
Gray text indicates a parameter non-detection.
Shaded text indicates a background standard exceedance.
* Reporting limit substituted for background standard due to lack of historical detections in the upgradient well.

Table 1. LCSWMA Creswell Landfill Form 19 Groundwater Monitoring Well Background Standard Comparisons - 2nd Quarter 2021

Parameter	Background Standard	Units	CWMP001W	CWMP002W	CWMP003W	CWMP004W	CWMP005W	CWMP007W	CWMP008W	CWMP009W	CWMP010W	CWMP012W	CWMP016W	CWMP017S	CWMP018S
Subtitle D Analytes															
ACETONE	10.0*	mg/L	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
ACRYLONITRILE	5.0*	mg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
BROMOCHLOROMETHANE (CHLOROBROMOMETHANE)	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
BROMODICHLOROMETHANE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CARBON DISULFIDE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
CHLOROFORM	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	7.0*	mg/L	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
trans 1,4-DICHLORO-2-BUTENE	3.0*	µmho/cm	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
2-HEXANONE	5.0*	µmho/cm	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
DIBROMOMETHANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
IODOMETHANE	1.0*	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
STYRENE	1.0*	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VINYL ACETATE	5.0*	mg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ANTIMONY	0.0022*	µg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022
BERYLLIUM	0.0011*	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011
COBALT	0.0056*	µg/L	< 0.0056	0.022	< 0.0056	< 0.0056	< 0.0056	< 0.0056	0.031	0.056	< 0.0056	< 0.0056	0.0074	< 0.0056	< 0.0056
NICKEL	0.0056*	µg/L	0.0066	0.027	0.0082	< 0.0056	0.0061	0.0060	0.019	0.074	0.018	0.010	< 0.0056	0.0098	0.014
THALLIUM	0.0011*	NTU	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011
VANADIUM	0.0022*	µg/L	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022	< 0.0022

Notes:

Gray text indicates a parameter non-detection.

Shaded text indicates a background standard exceedance.

* Reporting limit substituted for background standard due to lack of historical detections in the upgradient well.



BACKGROUND UPPER PREDICTION LIMITS

ATTACHMENT 1

LCSWMA Creswell Landfill 2nd Quarter 2021 - Background Upper Prediction Limits (MP-1)			
<i>Quarterly Parameters</i>			
Parameter	Distribution	Upper Prediction Limit	Unit
ammonia-nitrogen	No Distribution	0.120	mg/L
bicarbonate	No Distribution	8	mg/L
calcium, total	Lognormal	20.0	mg/L
calcium, dissolved	No Distribution	19.2	mg/L
cod (chemical oxygen demand)	Normal	12**	mg/L
chloride	No Distribution	32.6	mg/L
fluoride	NA	0.20*	mg/L
iron, total	Lognormal	3.5	mg/L
iron, dissolved	Lognormal	0.13	mg/L
magnesium, total	No Distribution	12.5	mg/L
magnesium, dissolved	No Distribution	12.4	mg/L
manganese, total	No Distribution	0.12	mg/L
manganese, dissolved	No Distribution	0.13	mg/L
nitrate-nitrogen	No Distribution	23.5	mg/L
ph-field	No Distribution	None***	S.U.
ph-lab	Normal	None***	S.U.
potassium, total	Normal	2.9	mg/L
potassium, dissolved	No Distribution	3.1	mg/L
sodium, total	Normal	15.6	mg/L
sodium, dissolved	Normal	15.1	mg/L
spec. cond., field	Normal	327	µmhos/cm
spec. cond., lab	No Distribution	300	µmhos/cm
sulfate	Lognormal	2.9	mg/L
total alkalinity	No Distribution	7	mg/L
tds (total dissolved solids)	Normal	261	mg/L
toc (total organic carbon)	Normal	1.1	mg/L
total phenolics	NA	0.005*	mg/L
turbidity	Lognormal	168	NTU
benzene	NA	1*	µg/L
1,2-dibromoethane (edb) (ethylene dibromide)	NA	1*	µg/L
1,1-dichloroethane	NA	1*	µg/L
1,1-dichloroethene	NA	1*	µg/L
1,2-dichloroethane	NA	1*	µg/L
cis 1,2-dichloroethene	NA	1*	µg/L
trans 1,2-dichloroethene	NA	1*	µg/L
ethylbenzene	NA	1*	µg/L
methylene chloride	NA	1*	µg/L
tetrachloroethene	NA	1*	µg/L
toluene	NA	1*	µg/L
1,1,1-trichloroethane	NA	1*	µg/L
trichloroethene	NA	1*	µg/L
vinyl chloride	NA	1*	µg/L
xylenes (total)	NA	3*	µg/L

LCSWMA Creswell Landfill 2nd Quarter 2021 - Background Upper Prediction Limits (MP-1)			
<i>Annual Parameters</i>			
Parameter	Distribution	Upper Prediction Limit	Unit
arsenic, total	NA	0.0033*	mg/L
arsenic, dissolved	NA	0.0030*	mg/L
barium, total	No Distribution	0.17	mg/L
barium, dissolved	No Distribution	0.19	mg/L
cadmium, total	NA	0.0011*	mg/L
cadmium, dissolved	NA	0.0011*	mg/L
chromium, total	NA	0.0022*	mg/L
chromium, dissolved	NA	0.0022*	mg/L
copper, total	NA	0.0056*	mg/L
copper, dissolved	NA	0.0056*	mg/L
lead-flameless, total	Lognormal	0.043	mg/L
lead, dissolved	NA	0.0022*	mg/L
mercury, total	NA	0.0005*	mg/L
mercury, dissolved	NA	0.0005*	mg/L
selenium, total	NA	0.0056*	mg/L
selenium, dissolved	NA	0.0056*	mg/L
silver, total	NA	0.0022*	mg/L
silver, dissolved	NA	0.0022*	mg/L
zinc, total	Normal	0.12	mg/L
zinc, dissolved	No Distribution	0.18	mg/L
bromoform	NA	1*	µg/L
bromomethane	NA	1*	µg/L
carbon tetrachloride	NA	1*	µg/L
chlorobenzene	NA	1*	µg/L
chloroethane	NA	1*	µg/L
dibromochloromethane (chlorodibromomethane)	NA	1*	µg/L
chloromethane	NA	1*	µg/L
3-chloro-1-propene	NA	1*	µg/L
1,2-dichlorobenzene	NA	1*	µg/L
1,3-dichlorobenzene	NA	1*	µg/L
1,4-dichlorobenzene	NA	1*	µg/L
dichlorodifluoromethane	NA	1*	µg/L
1,2-dichloropropane	NA	1*	µg/L
cis 1,3-dichloropropene	NA	1*	µg/L
trans 1,3-dichloropropene	NA	1*	µg/L
2-butanone (mek)	NA	10*	µg/L
4-methyl-2-pentanone (mibk)	NA	5*	µg/L
1,1,1,2-tetrachloroethane	NA	1*	µg/L
1,1,2,2-tetrachloroethane	NA	1*	µg/L
1,1,2-trichloroethane	NA	1*	µg/L
trichlorofluoromethane	NA	1*	µg/L
1,2,3-trichloropropane	NA	1*	µg/L

LCSWMA Creswell Landfill 2nd Quarter 2021 - Background Upper Prediction Limits (MP-1) <i>Subtitle D Parameters</i>			
Parameter	Distribution	Upper Prediction Limit	Unit
acetone	NA	10*	µg/L
acrylonitrile	NA	5*	µg/L
bromochloromethane (chlorobromomethane)	NA	1*	µg/L
bromodichloromethane	NA	1*	µg/L
carbon disulfide	NA	1*	µg/L
chloroform	NA	1*	µg/L
1,2-dibromo-3-chloropropane (dbcp) (dibromochlorom	NA	7*	µg/L
trans 1,4-dichloro-2-butene	NA	3*	µg/L
2-hexanone	NA	5*	µg/L
dibromomethane	NA	1*	µg/L
iodomethane	NA	1*	µg/L
styrene	NA	1*	µg/L
vinyl acetate	NA	5*	µg/L
antimony	NA	0.0022*	mg/l
beryllium	NA	0.0011*	mg/l
cobalt	NA	0.0056*	mg/l
nickel	NA	0.0056*	mg/l
thallium	NA	0.0011*	mg/l
vanadium	NA	0.0022*	mg/l

Notes:

"NA" denotes parameter not detected or not enough detections in MP-1 over course of historical data to develop tolerance limits.

* Reporting limit substituted for background standard due to lack of historical detections.

** COD background standard is lower than the current reporting limit.

*** One-sided background standards are not appropriate for pH. Other analysis used in report.



ATTACHMENT 2

STATISTICAL CALCULATION SHEETS

	A	B	C	D	E	F	G	H	I	J	K	L
1				Background Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	Date/Time of Computation			ProUCL 5.12/11/2022 14:18:47								
4	From File			2Q21 CWMP001W UCL Input Table.xls								
5	Full Precision			OFF								
6	Confidence Coefficient			95%								
7	Coverage			95%								
8	Different or Future K Observations			1								
9	Number of Bootstrap Operations			2000								
10												
11	AMMONIA-NITROGEN											
12												
13	General Statistics											
14	Total Number of Observations			123	Number of Missing Observations						12	
15	Number of Distinct Observations			6								
16	Number of Detects			10	Number of Non-Detects						113	
17	Number of Distinct Detects			5	Number of Distinct Non-Detects						1	
18	Minimum Detect			0.11	Minimum Non-Detect						0.1	
19	Maximum Detect			0.23	Maximum Non-Detect						0.1	
20	Variance Detected			0.00134	Percent Non-Detects						91.87%	
21	Mean Detected			0.136	SD Detected						0.0366	
22	Mean of Detected Logged Data			-2.021	SD of Detected Logged Data						0.229	
23												
24	Critical Values for Background Threshold Values (BTVs)											
25	Tolerance Factor K (For UTL)			1.893	d2max (for USL)						3.279	
26												
27	Normal GOF Test on Detects Only											
28	Shapiro Wilk Test Statistic			0.719	Shapiro Wilk GOF Test							
29	5% Shapiro Wilk Critical Value			0.842	Data Not Normal at 5% Significance Level							
30	Lilliefors Test Statistic			0.269	Lilliefors GOF Test							
31	5% Lilliefors Critical Value			0.262	Data Not Normal at 5% Significance Level							
32	Data Not Normal at 5% Significance Level											
33												
34	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
35	KM Mean			0.103	KM SD						0.014	
36	95% UTL95% Coverage			0.129	95% KM UPL (t)						0.126	
37	90% KM Percentile (z)			0.121	95% KM Percentile (z)						0.126	
38	99% KM Percentile (z)			0.135	95% KM USL						0.149	
39												
40	DL/2 Substitution Background Statistics Assuming Normal Distribution											
41	Mean			0.057	SD						0.0256	
42	95% UTL95% Coverage			0.105	95% UPL (t)						0.0996	
43	90% Percentile (z)			0.0898	95% Percentile (z)						0.0991	
44	99% Percentile (z)			0.117	95% USL						0.141	
45	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
46												
47	Gamma GOF Tests on Detected Observations Only											
48	A-D Test Statistic			0.912	Anderson-Darling GOF Test							
49	5% A-D Critical Value			0.725	Data Not Gamma Distributed at 5% Significance Level							
50	K-S Test Statistic			0.278	Kolmogorov-Smirnov GOF							

	A	B	C	D	E	F	G	H	I	J	K	L	
51	5% K-S Critical Value					0.266	Data Not Gamma Distributed at 5% Significance Level						
52	Data Not Gamma Distributed at 5% Significance Level												
53													
54	Gamma Statistics on Detected Data Only												
55	k hat (MLE)					19.28	k star (bias corrected MLE)					13.56	
56	Theta hat (MLE)					0.00706	Theta star (bias corrected MLE)					0.01	
57	nu hat (MLE)					385.5	nu star (bias corrected)					271.2	
58	MLE Mean (bias corrected)					0.136							
59	MLE Sd (bias corrected)					0.0369	95% Percentile of Chisquare (2kstar)					40.26	
60													
61	Gamma ROS Statistics using Imputed Non-Detects												
62	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
63	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
64	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
65	This is especially true when the sample size is small.												
66	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
67	Minimum					0.01	Mean					0.0277	
68	Maximum					0.23	Median					0.01	
69	SD					0.0381	CV					1.374	
70	k hat (MLE)					1.103	k star (bias corrected MLE)					1.082	
71	Theta hat (MLE)					0.0251	Theta star (bias corrected MLE)					0.0256	
72	nu hat (MLE)					271.4	nu star (bias corrected)					266.2	
73	MLE Mean (bias corrected)					0.0277	MLE Sd (bias corrected)					0.0267	
74	95% Percentile of Chisquare (2kstar)					6.305	90% Percentile					0.0626	
75	95% Percentile					0.0808	99% Percentile					0.123	
76	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
77	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
78					WH	HW					WH	HW	
79	95% Approx. Gamma UTL with 95% Coverage				0.0894	0.0884	95% Approx. Gamma UPL				0.0769	0.0753	
80	95% Gamma USL				0.194	0.208							
81													
82	Estimates of Gamma Parameters using KM Estimates												
83	Mean (KM)					0.103	SD (KM)					0.014	
84	Variance (KM)					1.9469E-4	SE of Mean (KM)					0.00133	
85	k hat (KM)					54.42	k star (KM)					53.09	
86	nu hat (KM)					13386	nu star (KM)					13061	
87	theta hat (KM)					0.00189	theta star (KM)					0.00194	
88	80% gamma percentile (KM)					0.115	90% gamma percentile (KM)					0.121	
89	95% gamma percentile (KM)					0.127	99% gamma percentile (KM)					0.139	
90													
91	The following statistics are computed using gamma distribution and KM estimates												
92	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
93					WH	HW					WH	HW	
94	95% Approx. Gamma UTL with 95% Coverage				0.125	0.125	95% Approx. Gamma UPL				0.122	0.122	
95	95% KM Gamma Percentile				0.122	0.122	95% Gamma USL				0.144	0.143	
96													
97	Lognormal GOF Test on Detected Observations Only												
98	Shapiro Wilk Test Statistic					0.791	Shapiro Wilk GOF Test						
99	5% Shapiro Wilk Critical Value					0.842	Data Not Lognormal at 5% Significance Level						
100	Lilliefors Test Statistic					0.267	Lilliefors GOF Test						

	A	B	C	D	E	F	G	H	I	J	K	L	
101	5% Lilliefors Critical Value					0.262	Data Not Lognormal at 5% Significance Level						
102	Data Not Lognormal at 5% Significance Level												
103													
104	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects												
105	Mean in Original Scale					0.0477	Mean in Log Scale					-3.265	
106	SD in Original Scale					0.0348	SD in Log Scale					0.67	
107	95% UTL95% Coverage					0.136	95% BCA UTL95% Coverage					0.138	
108	95% Bootstrap (%) UTL95% Coverage					0.138	95% UPL (t)					0.117	
109	90% Percentile (z)					0.0902	95% Percentile (z)					0.115	
110	99% Percentile (z)					0.182	95% USL					0.344	
111													
112	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
113	KM Mean of Logged Data					-2.28	95% KM UTL (Lognormal)95% Coverage					0.123	
114	KM SD of Logged Data					0.0987	95% KM UPL (Lognormal)					0.121	
115	95% KM Percentile Lognormal (z)					0.12	95% KM USL (Lognormal)					0.141	
116													
117	Background DL/2 Statistics Assuming Lognormal Distribution												
118	Mean in Original Scale					0.057	Mean in Log Scale					-2.917	
119	SD in Original Scale					0.0256	SD in Log Scale					0.275	
120	95% UTL95% Coverage					0.091	95% UPL (t)					0.0855	
121	90% Percentile (z)					0.0769	95% Percentile (z)					0.085	
122	99% Percentile (z)					0.103	95% USL					0.133	
123	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.												
124													
125	Nonparametric Distribution Free Background Statistics												
126	Data do not follow a Discernible Distribution (0.05)												
127													
128	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)												
129	Order of Statistic, r					120	95% UTL with95% Coverage					0.14	
130	Approx, f used to compute achieved CC					1.579	Approximate Actual Confidence Coefficient achieved by UTL					0.868	
131	Approximate Sample Size needed to achieve specified CC					153	95% UPL					0.12	
132	95% USL					0.23	95% KM Chebyshev UPL					0.164	
133													
134	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
135	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
136	and consists of observations collected from clean unimpacted locations.												
137	The use of USL tends to provide a balance between false positives and false negatives provided the data												
138	represents a background data set and when many onsite observations need to be compared with the BTV.												
139													
140	BICARBONATE												
141													
142	General Statistics												
143	Total Number of Observations					120	Number of Missing Observations					15	
144	Number of Distinct Observations					21							
145	Number of Detects					78	Number of Non-Detects					42	
146	Number of Distinct Detects					19	Number of Distinct Non-Detects					3	
147	Minimum Detect					4.7	Minimum Non-Detect					5	
148	Maximum Detect					9.5	Maximum Non-Detect					6.2	
149	Variance Detected					1.273	Percent Non-Detects					35%	
150	Mean Detected					6.304	SD Detected					1.128	

	A	B	C	D	E	F	G	H	I	J	K	L
151	Mean of Detected Logged Data					1.826	SD of Detected Logged Data					0.174
152												
153	Critical Values for Background Threshold Values (BTVs)											
154	Tolerance Factor K (For UTL)					1.897	d2max (for USL)					3.271
155												
156	Normal GOF Test on Detects Only											
157	Shapiro Wilk Test Statistic					0.889	Normal GOF Test on Detected Observations Only					
158	5% Shapiro Wilk P Value					1.2580E-7	Data Not Normal at 5% Significance Level					
159	Lilliefors Test Statistic					0.247	Lilliefors GOF Test					
160	5% Lilliefors Critical Value					0.1	Data Not Normal at 5% Significance Level					
161	Data Not Normal at 5% Significance Level											
162												
163	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
164	KM Mean					5.747	KM SD					1.182
165	95% UTL95% Coverage					7.989	95% KM UPL (t)					7.715
166	90% KM Percentile (z)					7.262	95% KM Percentile (z)					7.692
167	99% KM Percentile (z)					8.497	95% KM USL					9.613
168												
169	DL/2 Substitution Background Statistics Assuming Normal Distribution											
170	Mean					4.979	SD					2.029
171	95% UTL95% Coverage					8.827	95% UPL (t)					8.356
172	90% Percentile (z)					7.579	95% Percentile (z)					8.316
173	99% Percentile (z)					9.698	95% USL					11.61
174	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
175												
176	Gamma GOF Tests on Detected Observations Only											
177	A-D Test Statistic					2.888	Anderson-Darling GOF Test					
178	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level					
179	K-S Test Statistic					0.23	Kolmogorov-Smirnov GOF					
180	5% K-S Critical Value					0.101	Data Not Gamma Distributed at 5% Significance Level					
181	Data Not Gamma Distributed at 5% Significance Level											
182												
183	Gamma Statistics on Detected Data Only											
184	k hat (MLE)					33.18	k star (bias corrected MLE)					31.91
185	Theta hat (MLE)					0.19	Theta star (bias corrected MLE)					0.198
186	nu hat (MLE)					5176	nu star (bias corrected)					4979
187	MLE Mean (bias corrected)					6.304						
188	MLE Sd (bias corrected)					1.116	95% Percentile of Chisquare (2kstar)					83.48
189												
190	Gamma ROS Statistics using Imputed Non-Detects											
191	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
192	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
193	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
194	This is especially true when the sample size is small.											
195	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
196	Minimum					2.314	Mean					5.498
197	Maximum					9.5	Median					5.05
198	SD					1.479	CV					0.269
199	k hat (MLE)					13.59	k star (bias corrected MLE)					13.25
200	Theta hat (MLE)					0.405	Theta star (bias corrected MLE)					0.415

	A	B	C	D	E	F	G	H	I	J	K	L	
201	nu hat (MLE)					3261	nu star (bias corrected)					3180	
202	MLE Mean (bias corrected)					5.498	MLE Sd (bias corrected)					1.51	
203	95% Percentile of Chisquare (2kstar)					39.5	90% Percentile					7.5	
204	95% Percentile					8.194	99% Percentile					9.606	
205	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
206	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
207						WH	HW					WH	HW
208	95% Approx. Gamma UTL with 95% Coverage					8.673	8.74	95% Approx. Gamma UPL				8.21	8.256
209	95% Gamma USL					11.77	12.06						
210													
211	Estimates of Gamma Parameters using KM Estimates												
212	Mean (KM)					5.747	SD (KM)					1.182	
213	Variance (KM)					1.397	SE of Mean (KM)					0.109	
214	k hat (KM)					23.64	k star (KM)					23.06	
215	nu hat (KM)					5675	nu star (KM)					5534	
216	theta hat (KM)					0.243	theta star (KM)					0.249	
217	80% gamma percentile (KM)					6.723	90% gamma percentile (KM)					7.325	
218	95% gamma percentile (KM)					7.847	99% gamma percentile (KM)					8.892	
219													
220	The following statistics are computed using gamma distribution and KM estimates												
221	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
222						WH	HW					WH	HW
223	95% Approx. Gamma UTL with 95% Coverage					8.06	8.072	95% Approx. Gamma UPL				7.738	7.742
224	95% KM Gamma Percentile					7.711	7.715	95% Gamma USL				10.15	10.24
225													
226	Lognormal GOF Test on Detected Observations Only												
227	Shapiro Wilk Approximate Test Statistic					0.9	Shapiro Wilk GOF Test						
228	5% Shapiro Wilk P Value					1.0933E-6	Data Not Lognormal at 5% Significance Level						
229	Lilliefors Test Statistic					0.219	Lilliefors GOF Test						
230	5% Lilliefors Critical Value					0.1	Data Not Lognormal at 5% Significance Level						
231	Data Not Lognormal at 5% Significance Level												
232													
233	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects												
234	Mean in Original Scale					5.579	Mean in Log Scale					1.689	
235	SD in Original Scale					1.377	SD in Log Scale					0.245	
236	95% UTL95% Coverage					8.617	95% BCA UTL95% Coverage					8	
237	95% Bootstrap (%) UTL95% Coverage					8.125	95% UPL (t)					8.141	
238	90% Percentile (z)					7.412	95% Percentile (z)					8.101	
239	99% Percentile (z)					9.572	95% USL					12.06	
240													
241	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
242	KM Mean of Logged Data					1.729	95% KM UTL (Lognormal)95% Coverage					8.112	
243	KM SD of Logged Data					0.192	95% KM UPL (Lognormal)					7.759	
244	95% KM Percentile Lognormal (z)					7.729	95% KM USL (Lognormal)					10.56	
245													
246	Background DL/2 Statistics Assuming Lognormal Distribution												
247	Mean in Original Scale					4.979	Mean in Log Scale					1.51	
248	SD in Original Scale					2.029	SD in Log Scale					0.455	
249	95% UTL95% Coverage					10.73	95% UPL (t)					9.654	
250	90% Percentile (z)					8.109	95% Percentile (z)					9.567	

	A	B	C	D	E	F	G	H	I	J	K	L
251	99% Percentile (z)					13.05	95% USL					20.05
252	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
253												
254	Nonparametric Distribution Free Background Statistics											
255	Data do not follow a Discernible Distribution (0.05)											
256												
257	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
258	Order of Statistic, r					117	95% UTL with 95% Coverage					8.1
259	Approx, f used to compute achieved CC					1.539	Approximate Actual Confidence Coefficient achieved by UTL					0.856
260	Approximate Sample Size needed to achieve specified CC					153	95% UPL					8
261	95% USL					9.5	95% KM Chebyshev UPL					10.92
262												
263	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
264	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
265	and consists of observations collected from clean unimpacted locations.											
266	The use of USL tends to provide a balance between false positives and false negatives provided the data											
267	represents a background data set and when many onsite observations need to be compared with the BTV.											
268												
269	CALCIUM, TOTAL											
270												
271	General Statistics											
272	Total Number of Observations					61	Number of Distinct Observations					31
273							Number of Missing Observations					74
274	Minimum					12	First Quartile					14
275	Second Largest					20.1	Median					15.4
276	Maximum					21	Third Quartile					17.4
277	Mean					16.04	SD					2.183
278	Coefficient of Variation					0.136	Skewness					0.336
279	Mean of logged Data					2.766	SD of logged Data					0.135
280												
281	Critical Values for Background Threshold Values (BTVs)											
282	Tolerance Factor K (For UTL)					2.013	d2max (for USL)					3.033
283												
284	Normal GOF Test											
285	Shapiro Wilk Test Statistic					0.947	Normal GOF Test					
286	5% Shapiro Wilk P Value					0.0207	Data Not Normal at 5% Significance Level					
287	Lilliefors Test Statistic					0.142	Lilliefors GOF Test					
288	5% Lilliefors Critical Value					0.113	Data Not Normal at 5% Significance Level					
289	Data Not Normal at 5% Significance Level											
290												
291	Background Statistics Assuming Normal Distribution											
292	95% UTL with 95% Coverage					20.44	90% Percentile (z)					18.84
293	95% UPL (t)					19.72	95% Percentile (z)					19.63
294	95% USL					22.66	99% Percentile (z)					21.12
295												
296	Gamma GOF Test											
297	A-D Test Statistic					0.933	Anderson-Darling Gamma GOF Test					
298	5% A-D Critical Value					0.748	Data Not Gamma Distributed at 5% Significance Level					
299	K-S Test Statistic					0.133	Kolmogorov-Smirnov Gamma GOF Test					
300	5% K-S Critical Value					0.113	Data Not Gamma Distributed at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
301	Data Not Gamma Distributed at 5% Significance Level											
302												
303	Gamma Statistics											
304	k hat (MLE)				55.65		k star (bias corrected MLE)				52.93	
305	Theta hat (MLE)				0.288		Theta star (bias corrected MLE)				0.303	
306	nu hat (MLE)				6790		nu star (bias corrected)				6457	
307	MLE Mean (bias corrected)				16.04		MLE Sd (bias corrected)				2.205	
308												
309	Background Statistics Assuming Gamma Distribution											
310	95% Wilson Hilferty (WH) Approx. Gamma UPL				19.87		90% Percentile				18.92	
311	95% Hawkins Wixley (HW) Approx. Gamma UPL				19.89		95% Percentile				19.83	
312	95% WH Approx. Gamma UTL with 95% Coverage				20.7		99% Percentile				21.61	
313	95% HW Approx. Gamma UTL with 95% Coverage				20.74							
314	95% WH USL				23.43		95% HW USL				23.55	
315												
316	Lognormal GOF Test											
317	Shapiro Wilk Test Statistic				0.955		Shapiro Wilk Lognormal GOF Test					
318	5% Shapiro Wilk P Value				0.0538		Data appear Lognormal at 5% Significance Level					
319	Lilliefors Test Statistic				0.125		Lilliefors Lognormal GOF Test					
320	5% Lilliefors Critical Value				0.113		Data Not Lognormal at 5% Significance Level					
321	Data appear Approximate Lognormal at 5% Significance Level											
322												
323	Background Statistics assuming Lognormal Distribution											
324	95% UTL with 95% Coverage				20.87		90% Percentile (z)				18.9	
325	95% UPL (t)				19.96		95% Percentile (z)				19.85	
326	95% USL				23.95		99% Percentile (z)				21.77	
327												
328	Nonparametric Distribution Free Background Statistics											
329	Data appear Approximate Lognormal at 5% Significance Level											
330												
331	Nonparametric Upper Limits for Background Threshold Values											
332	Order of Statistic, r				60		95% UTL with 95% Coverage				20.1	
333	Approx, f used to compute achieved CC				1.579		Approximate Actual Confidence Coefficient achieved by UTL				0.816	
334							Approximate Sample Size needed to achieve specified CC				93	
335	95% Percentile Bootstrap UTL with 95% Coverage				20.1		95% BCA Bootstrap UTL with 95% Coverage				20.1	
336	95% UPL				20.06		90% Percentile				19.2	
337	90% Chebyshev UPL				22.64		95% Percentile				19.7	
338	95% Chebyshev UPL				25.63		99% Percentile				20.46	
339	95% USL				21							
340												
341	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
342	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
343	and consists of observations collected from clean unimpacted locations.											
344	The use of USL tends to provide a balance between false positives and false negatives provided the data											
345	represents a background data set and when many onsite observations need to be compared with the BTV.											
346												
347	CALCIUM, DISSOLVED											
348												
349	General Statistics											
350	Total Number of Observations				95		Number of Distinct Observations				43	

	A	B	C	D	E	F	G	H	I	J	K	L	
351							Number of Missing Observations						40
352	Minimum					10.4	First Quartile						14
353	Second Largest					20.1	Median						16.4
354	Maximum					20.1	Third Quartile						17.4
355	Mean					15.89	SD						2.21
356	Coefficient of Variation					0.139	Skewness						-0.321
357	Mean of logged Data					2.756	SD of logged Data						0.145
358													
359	Critical Values for Background Threshold Values (BTVs)												
360	Tolerance Factor K (For UTL)					1.932	d2max (for USL)					3.192	
361													
362	Normal GOF Test												
363	Shapiro Wilk Test Statistic					0.95	Normal GOF Test						
364	5% Shapiro Wilk P Value					0.00384	Data Not Normal at 5% Significance Level						
365	Lilliefors Test Statistic					0.117	Lilliefors GOF Test						
366	5% Lilliefors Critical Value					0.0911	Data Not Normal at 5% Significance Level						
367	Data Not Normal at 5% Significance Level												
368													
369	Background Statistics Assuming Normal Distribution												
370	95% UTL with 95% Coverage				20.16	90% Percentile (z)					18.72		
371	95% UPL (t)				19.58	95% Percentile (z)					19.53		
372	95% USL				22.95	99% Percentile (z)					21.03		
373													
374	Gamma GOF Test												
375	A-D Test Statistic					1.784	Anderson-Darling Gamma GOF Test						
376	5% A-D Critical Value					0.751	Data Not Gamma Distributed at 5% Significance Level						
377	K-S Test Statistic					0.133	Kolmogorov-Smirnov Gamma GOF Test						
378	5% K-S Critical Value					0.0916	Data Not Gamma Distributed at 5% Significance Level						
379	Data Not Gamma Distributed at 5% Significance Level												
380													
381	Gamma Statistics												
382	k hat (MLE)					49.78	k star (bias corrected MLE)					48.22	
383	Theta hat (MLE)					0.319	Theta star (bias corrected MLE)					0.33	
384	nu hat (MLE)					9459	nu star (bias corrected)					9162	
385	MLE Mean (bias corrected)					15.89	MLE Sd (bias corrected)					2.289	
386													
387	Background Statistics Assuming Gamma Distribution												
388	95% Wilson Hilferty (WH) Approx. Gamma UPL					19.86	90% Percentile					18.89	
389	95% Hawkins Wixley (HW) Approx. Gamma UPL					19.9	95% Percentile					19.83	
390	95% WH Approx. Gamma UTL with 95% Coverage				20.55	99% Percentile					21.69		
391	95% HW Approx. Gamma UTL with 95% Coverage				20.61								
392	95% WH USL				24.13	95% HW USL					24.32		
393													
394	Lognormal GOF Test												
395	Shapiro Wilk Test Statistic					0.936	Shapiro Wilk Lognormal GOF Test						
396	5% Shapiro Wilk P Value					1.6460E-4	Data Not Lognormal at 5% Significance Level						
397	Lilliefors Test Statistic					0.139	Lilliefors Lognormal GOF Test						
398	5% Lilliefors Critical Value					0.0911	Data Not Lognormal at 5% Significance Level						
399	Data Not Lognormal at 5% Significance Level												
400													

	A	B	C	D	E	F	G	H	I	J	K	L
401	Background Statistics assuming Lognormal Distribution											
402	95% UTL with 95% Coverage				20.81	90% Percentile (z)				18.94		
403	95% UPL (t)				20.03	95% Percentile (z)				19.96		
404	95% USL				24.97	99% Percentile (z)				22.03		
405												
406	Nonparametric Distribution Free Background Statistics											
407	Data do not follow a Discernible Distribution (0.05)											
408												
409	Nonparametric Upper Limits for Background Threshold Values											
410	Order of Statistic, r				93	95% UTL with 95% Coverage				19.4		
411	Approx, f used to compute achieved CC				1.632	Approximate Actual Confidence Coefficient achieved by UTL				0.859		
412						Approximate Sample Size needed to achieve specified CC				124		
413	95% Percentile Bootstrap UTL with 95% Coverage				19.4	95% BCA Bootstrap UTL with 95% Coverage				19.4		
414	95% UPL				19.2	90% Percentile				18.5		
415	90% Chebyshev UPL				22.56	95% Percentile				19.13		
416	95% Chebyshev UPL				25.57	99% Percentile				20.1		
417	95% USL				20.1							
418												
419	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
420	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
421	and consists of observations collected from clean unimpacted locations.											
422	The use of USL tends to provide a balance between false positives and false negatives provided the data											
423	represents a background data set and when many onsite observations need to be compared with the BTV.											
424												
425	COD (CHEMICAL OXYGEN DEMAND)											
426												
427	General Statistics											
428	Total Number of Observations				131	Number of Missing Observations				4		
429	Number of Distinct Observations				9							
430	Number of Detects				6	Number of Non-Detects				125		
431	Number of Distinct Detects				6	Number of Distinct Non-Detects				4		
432	Minimum Detect				5	Minimum Non-Detect				5		
433	Maximum Detect				31	Maximum Non-Detect				20		
434	Variance Detected				149.5	Percent Non-Detects				95.42%		
435	Mean Detected				17.67	SD Detected				12.23		
436	Mean of Detected Logged Data				2.61	SD of Detected Logged Data				0.838		
437												
438	Critical Values for Background Threshold Values (BTVs)											
439	Tolerance Factor K (For UTL)				1.885	d2max (for USL)				3.299		
440												
441	Normal GOF Test on Detects Only											
442	Shapiro Wilk Test Statistic				0.814	Shapiro Wilk GOF Test						
443	5% Shapiro Wilk Critical Value				0.788	Detected Data appear Normal at 5% Significance Level						
444	Lilliefors Test Statistic				0.261	Lilliefors GOF Test						
445	5% Lilliefors Critical Value				0.325	Detected Data appear Normal at 5% Significance Level						
446	Detected Data appear Normal at 5% Significance Level											
447												
448	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
449	KM Mean				5.745	KM SD				3.609		
450	95% UTL95% Coverage				12.55	95% KM UPL (t)				11.75		

	A	B	C	D	E	F	G	H	I	J	K	L	
451	90% KM Percentile (z)					10.37	95% KM Percentile (z)					11.68	
452	99% KM Percentile (z)					14.14	95% KM USL					17.65	
453													
454	DL/2 Substitution Background Statistics Assuming Normal Distribution												
455	Mean					8.496	SD					4.107	
456	95% UTL95% Coverage					16.24	95% UPL (t)					15.33	
457	90% Percentile (z)					13.76	95% Percentile (z)					15.25	
458	99% Percentile (z)					18.05	95% USL					22.05	
459	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
460													
461	Gamma GOF Tests on Detected Observations Only												
462	A-D Test Statistic					0.61	Anderson-Darling GOF Test						
463	5% A-D Critical Value					0.704	Detected data appear Gamma Distributed at 5% Significance Level						
464	K-S Test Statistic					0.294	Kolmogorov-Smirnov GOF						
465	5% K-S Critical Value					0.336	Detected data appear Gamma Distributed at 5% Significance Level						
466	Detected data appear Gamma Distributed at 5% Significance Level												
467													
468	Gamma Statistics on Detected Data Only												
469	k hat (MLE)					2.059	k star (bias corrected MLE)					1.141	
470	Theta hat (MLE)					8.579	Theta star (bias corrected MLE)					15.49	
471	nu hat (MLE)					24.71	nu star (bias corrected)					13.69	
472	MLE Mean (bias corrected)					17.67							
473	MLE Sd (bias corrected)					16.54	95% Percentile of Chisquare (2kstar)					6.526	
474													
475	Gamma ROS Statistics using Imputed Non-Detects												
476	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
477	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
478	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
479	This is especially true when the sample size is small.												
480	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
481	Minimum					0.01	Mean					1.54	
482	Maximum					31	Median					0.01	
483	SD					4.972	CV					3.228	
484	k hat (MLE)					0.185	k star (bias corrected MLE)					0.186	
485	Theta hat (MLE)					8.315	Theta star (bias corrected MLE)					8.277	
486	nu hat (MLE)					48.54	nu star (bias corrected)					48.76	
487	MLE Mean (bias corrected)					1.54	MLE Sd (bias corrected)					3.571	
488	95% Percentile of Chisquare (2kstar)					1.953	90% Percentile					4.652	
489	95% Percentile					8.083	99% Percentile					17.64	
490	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
491	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
492						WH	HW					WH	HW
493	95% Approx. Gamma UTL with 95% Coverage					5.562	4.791	95% Approx. Gamma UPL				4.257	3.492
494	95% Gamma USL					20.45	23.27						
495													
496	Estimates of Gamma Parameters using KM Estimates												
497	Mean (KM)					5.745	SD (KM)					3.609	
498	Variance (KM)					13.02	SE of Mean (KM)					0.377	
499	k hat (KM)					2.534	k star (KM)					2.481	
500	nu hat (KM)					663.9	nu star (KM)					650	

	A	B	C	D	E	F	G	H	I	J	K	L	
501	theta hat (KM)					2.267	theta star (KM)					2.315	
502	80% gamma percentile (KM)					8.382	90% gamma percentile (KM)					10.63	
503	95% gamma percentile (KM)					12.75	99% gamma percentile (KM)					17.39	
504													
505	The following statistics are computed using gamma distribution and KM estimates												
506	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
507						WH	HW					WH	HW
508	95% Approx. Gamma UTL with 95% Coverage					10.08	9.823	95% Approx. Gamma UPL				9.435	9.201
509	95% KM Gamma Percentile					9.384	9.152	95% Gamma USL				14.89	14.56
510													
511	Lognormal GOF Test on Detected Observations Only												
512	Shapiro Wilk Test Statistic					0.831	Shapiro Wilk GOF Test						
513	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Lognormal at 5% Significance Level						
514	Lilliefors Test Statistic					0.28	Lilliefors GOF Test						
515	5% Lilliefors Critical Value					0.325	Detected Data appear Lognormal at 5% Significance Level						
516	Detected Data appear Lognormal at 5% Significance Level												
517													
518	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects												
519	Mean in Original Scale					2.378	Mean in Log Scale					-0.096	
520	SD in Original Scale					4.647	SD in Log Scale					1.386	
521	95% UTL95% Coverage					12.38	95% BCA UTL95% Coverage					11.31	
522	95% Bootstrap (%) UTL95% Coverage					12.55	95% UPL (t)					9.103	
523	90% Percentile (z)					5.366	95% Percentile (z)					8.877	
524	99% Percentile (z)					22.83	95% USL					87.91	
525													
526	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
527	KM Mean of Logged Data					1.681	95% KM UTL (Lognormal)95% Coverage					9.133	
528	KM SD of Logged Data					0.282	95% KM UPL (Lognormal)					8.58	
529	95% KM Percentile Lognormal (z)					8.536	95% KM USL (Lognormal)					13.6	
530													
531	Background DL/2 Statistics Assuming Lognormal Distribution												
532	Mean in Original Scale					8.496	Mean in Log Scale					2.023	
533	SD in Original Scale					4.107	SD in Log Scale					0.518	
534	95% UTL95% Coverage					20.08	95% UPL (t)					17.9	
535	90% Percentile (z)					14.69	95% Percentile (z)					17.73	
536	99% Percentile (z)					25.23	95% USL					41.77	
537	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.												
538													
539	Nonparametric Distribution Free Background Statistics												
540	Data appear to follow a Discernible Distribution at 5% Significance Level												
541													
542	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)												
543	Order of Statistic, r					128	95% UTL with95% Coverage					20	
544	Approx, f used to compute achieved CC					1.684	Approximate Actual Confidence Coefficient achieved by UTL					0.898	
545	Approximate Sample Size needed to achieve specified CC					153	95% UPL					20	
546	95% USL					31	95% KM Chebyshev UPL					21.53	
547													
548	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
549	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
550	and consists of observations collected from clean unimpacted locations.												

	A	B	C	D	E	F	G	H	I	J	K	L
551	The use of USL tends to provide a balance between false positives and false negatives provided the data											
552	represents a background data set and when many onsite observations need to be compared with the BTV.											
553												
554	CHLORIDE											
555												
556	General Statistics											
557	Total Number of Observations				133		Number of Missing Observations				2	
558	Number of Distinct Observations				65							
559	Number of Detects				130		Number of Non-Detects				3	
560	Number of Distinct Detects				64		Number of Distinct Non-Detects				3	
561	Minimum Detect				15		Minimum Non-Detect				18	
562	Maximum Detect				33.2		Maximum Non-Detect				41	
563	Variance Detected				19.62		Percent Non-Detects				2.256%	
564	Mean Detected				25.1		SD Detected				4.429	
565	Mean of Detected Logged Data				3.206		SD of Detected Logged Data				0.187	
566												
567	Critical Values for Background Threshold Values (BTVs)											
568	Tolerance Factor K (For UTL)				1.883		d2max (for USL)				3.304	
569												
570	Normal GOF Test on Detects Only											
571	Shapiro Wilk Test Statistic				0.954		Normal GOF Test on Detected Observations Only					
572	5% Shapiro Wilk P Value				0.00128		Data Not Normal at 5% Significance Level					
573	Lilliefors Test Statistic				0.0942		Lilliefors GOF Test					
574	5% Lilliefors Critical Value				0.0781		Data Not Normal at 5% Significance Level					
575	Data Not Normal at 5% Significance Level											
576												
577	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
578	KM Mean				24.98		KM SD				4.483	
579	95% UTL95% Coverage				33.42		95% KM UPL (t)				32.44	
580	90% KM Percentile (z)				30.73		95% KM Percentile (z)				32.36	
581	99% KM Percentile (z)				35.41		95% KM USL				39.8	
582												
583	DL/2 Substitution Background Statistics Assuming Normal Distribution											
584	Mean				24.83		SD				4.779	
585	95% UTL95% Coverage				33.83		95% UPL (t)				32.78	
586	90% Percentile (z)				30.96		95% Percentile (z)				32.7	
587	99% Percentile (z)				35.95		95% USL				40.63	
588	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
589												
590	Gamma GOF Tests on Detected Observations Only											
591	A-D Test Statistic				1.662		Anderson-Darling GOF Test					
592	5% A-D Critical Value				0.75		Data Not Gamma Distributed at 5% Significance Level					
593	K-S Test Statistic				0.12		Kolmogorov-Smirnov GOF					
594	5% K-S Critical Value				0.0815		Data Not Gamma Distributed at 5% Significance Level					
595	Data Not Gamma Distributed at 5% Significance Level											
596												
597	Gamma Statistics on Detected Data Only											
598	k hat (MLE)				30.16		k star (bias corrected MLE)				29.47	
599	Theta hat (MLE)				0.832		Theta star (bias corrected MLE)				0.852	
600	nu hat (MLE)				7842		nu star (bias corrected)				7663	

	A	B	C	D	E	F	G	H	I	J	K	L
601	MLE Mean (bias corrected)					25.1						
602	MLE Sd (bias corrected)					4.623	95% Percentile of Chisquare (2kstar)					77.87
603												
604	Gamma ROS Statistics using Imputed Non-Detects											
605	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
606	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
607	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
608	This is especially true when the sample size is small.											
609	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
610	Minimum					15	Mean					25
611	Maximum					33.2	Median					25.5
612	SD					4.451	CV					0.178
613	k hat (MLE)					29.73	k star (bias corrected MLE)					29.07
614	Theta hat (MLE)					0.841	Theta star (bias corrected MLE)					0.86
615	nu hat (MLE)					7909	nu star (bias corrected)					7732
616	MLE Mean (bias corrected)					25	MLE Sd (bias corrected)					4.637
617	95% Percentile of Chisquare (2kstar)					76.94	90% Percentile					31.1
618	95% Percentile					33.08	99% Percentile					37.03
619	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
620	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
621				WH	HW						WH	HW
622	95% Approx. Gamma UTL with 95% Coverage			34.36	34.52	95% Approx. Gamma UPL					33.12	33.24
623	95% Gamma USL			43.1	43.69							
624												
625	Estimates of Gamma Parameters using KM Estimates											
626	Mean (KM)					24.98	SD (KM)					4.483
627	Variance (KM)					20.1	SE of Mean (KM)					0.392
628	k hat (KM)					31.05	k star (KM)					30.35
629	nu hat (KM)					8259	nu star (KM)					8074
630	theta hat (KM)					0.805	theta star (KM)					0.823
631	80% gamma percentile (KM)					28.7	90% gamma percentile (KM)					30.94
632	95% gamma percentile (KM)					32.88	99% gamma percentile (KM)					36.72
633												
634	The following statistics are computed using gamma distribution and KM estimates											
635	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
636				WH	HW						WH	HW
637	95% Approx. Gamma UTL with 95% Coverage			34.43	34.59	95% Approx. Gamma UPL					33.18	33.3
638	95% KM Gamma Percentile			33.08	33.2	95% Gamma USL					43.27	43.88
639												
640	Lognormal GOF Test on Detected Observations Only											
641	Shapiro Wilk Approximate Test Statistic					0.932	Shapiro Wilk GOF Test					
642	5% Shapiro Wilk P Value					6.2947E-7	Data Not Lognormal at 5% Significance Level					
643	Lilliefors Test Statistic					0.133	Lilliefors GOF Test					
644	5% Lilliefors Critical Value					0.0781	Data Not Lognormal at 5% Significance Level					
645	Data Not Lognormal at 5% Significance Level											
646												
647	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
648	Mean in Original Scale					25	Mean in Log Scale					3.202
649	SD in Original Scale					4.454	SD in Log Scale					0.189
650	95% UTL95% Coverage					35.05	95% BCA UTL95% Coverage					32.76

	A	B	C	D	E	F	G	H	I	J	K	L
651	95% Bootstrap (%) UTL95% Coverage					32.76	95% UPL (t)					33.63
652	90% Percentile (z)					31.29	95% Percentile (z)					33.51
653	99% Percentile (z)					38.11	95% USL					45.82
654												
655	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
656	KM Mean of Logged Data					3.201	95% KM UTL (Lognormal)95% Coverage					35.14
657	KM SD of Logged Data					0.19	95% KM UPL (Lognormal)					33.7
658	95% KM Percentile Lognormal (z)					33.58	95% KM USL (Lognormal)					46.06
659												
660	Background DL/2 Statistics Assuming Lognormal Distribution											
661	Mean in Original Scale					24.83	Mean in Log Scale					3.191
662	SD in Original Scale					4.779	SD in Log Scale					0.218
663	95% UTL95% Coverage					36.65	95% UPL (t)					34.93
664	90% Percentile (z)					32.14	95% Percentile (z)					34.79
665	99% Percentile (z)					40.37	95% USL					49.96
666	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
667												
668	Nonparametric Distribution Free Background Statistics											
669	Data do not follow a Discernible Distribution (0.05)											
670												
671	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
672	Order of Statistic, r					130	95% UTL with95% Coverage					33
673	Approx, f used to compute achieved CC					1.711	Approximate Actual Confidence Coefficient achieved by UTL					0.904
674	Approximate Sample Size needed to achieve specified CC					153	95% UPL					32.6
675	95% USL					41	95% KM Chebyshev UPL					44.6
676												
677	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
678	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
679	and consists of observations collected from clean unimpacted locations.											
680	The use of USL tends to provide a balance between false positives and false negatives provided the data											
681	represents a background data set and when many onsite observations need to be compared with the BTV.											
682												
683	FLUORIDE											
684												
685	General Statistics											
686	Total Number of Observations					95	Number of Missing Observations					40
687	Number of Distinct Observations					4						
688	Number of Detects					0	Number of Non-Detects					95
689	Number of Distinct Detects					0	Number of Distinct Non-Detects					4
690	Minimum Detect					N/A	Minimum Non-Detect					0.1
691	Maximum Detect					N/A	Maximum Non-Detect					0.5
692	Variance Detected					N/A	Percent Non-Detects					100%
693	Mean Detected					N/A	SD Detected					N/A
694	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
695												
696	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
697	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
698	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
699												
700	The data set for variable FLUORIDE was not processed!											

	A	B	C	D	E	F	G	H	I	J	K	L
701												
702												
703	IRON, TOTAL											
704												
705	General Statistics											
706	Total Number of Observations					69	Number of Missing Observations					66
707	Number of Distinct Observations					47						
708	Number of Detects					66	Number of Non-Detects					3
709	Number of Distinct Detects					44	Number of Distinct Non-Detects					3
710	Minimum Detect					0.06	Minimum Non-Detect					0.12
711	Maximum Detect					3.5	Maximum Non-Detect					0.34
712	Variance Detected					0.713	Percent Non-Detects					4.348%
713	Mean Detected					1.12	SD Detected					0.844
714	Mean of Detected Logged Data					-0.184	SD of Detected Logged Data					0.827
715												
716	Critical Values for Background Threshold Values (BTVs)											
717	Tolerance Factor K (For UTL)					1.988	d2max (for USL)					3.079
718												
719	Normal GOF Test on Detects Only											
720	Shapiro Wilk Test Statistic					0.868	Normal GOF Test on Detected Observations Only					
721	5% Shapiro Wilk P Value					9.9314E-8	Data Not Normal at 5% Significance Level					
722	Lilliefors Test Statistic					0.156	Lilliefors GOF Test					
723	5% Lilliefors Critical Value					0.109	Data Not Normal at 5% Significance Level					
724	Data Not Normal at 5% Significance Level											
725												
726	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
727	KM Mean					1.077	KM SD					0.844
728	95% UTL95% Coverage					2.755	95% KM UPL (t)					2.495
729	90% KM Percentile (z)					2.159	95% KM Percentile (z)					2.466
730	99% KM Percentile (z)					3.041	95% KM USL					3.676
731												
732	DL/2 Substitution Background Statistics Assuming Normal Distribution											
733	Mean					1.076	SD					0.851
734	95% UTL95% Coverage					2.769	95% UPL (t)					2.506
735	90% Percentile (z)					2.167	95% Percentile (z)					2.476
736	99% Percentile (z)					3.057	95% USL					3.697
737	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
738												
739	Gamma GOF Tests on Detected Observations Only											
740	A-D Test Statistic					0.657	Anderson-Darling GOF Test					
741	5% A-D Critical Value					0.765	Detected data appear Gamma Distributed at 5% Significance Level					
742	K-S Test Statistic					0.0787	Kolmogorov-Smirnov GOF					
743	5% K-S Critical Value					0.111	Detected data appear Gamma Distributed at 5% Significance Level					
744	Detected data appear Gamma Distributed at 5% Significance Level											
745												
746	Gamma Statistics on Detected Data Only											
747	k hat (MLE)					1.83	k star (bias corrected MLE)					1.757
748	Theta hat (MLE)					0.612	Theta star (bias corrected MLE)					0.637
749	nu hat (MLE)					241.6	nu star (bias corrected)					232
750	MLE Mean (bias corrected)					1.12						

	A	B	C	D	E	F	G	H	I	J	K	L
751	MLE Sd (bias corrected)					0.845	95% Percentile of Chisquare (2kstar)					8.689
752												
753	Gamma ROS Statistics using Imputed Non-Detects											
754	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
755	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
756	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
757	This is especially true when the sample size is small.											
758	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
759	Minimum					0.0131	Mean					1.074
760	Maximum					3.5	Median					0.76
761	SD					0.854	CV					0.795
762	k hat (MLE)					1.389	k star (bias corrected MLE)					1.338
763	Theta hat (MLE)					0.773	Theta star (bias corrected MLE)					0.803
764	nu hat (MLE)					191.6	nu star (bias corrected)					184.6
765	MLE Mean (bias corrected)					1.074	MLE Sd (bias corrected)					0.928
766	95% Percentile of Chisquare (2kstar)					7.245	90% Percentile					2.301
767	95% Percentile					2.907	99% Percentile					4.286
768	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
769	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
770					WH	HW					WH	HW
771	95% Approx. Gamma UTL with 95% Coverage				3.469	3.761	95% Approx. Gamma UPL				2.899	3.074
772	95% Gamma USL				6.076	7.143						
773												
774	Estimates of Gamma Parameters using KM Estimates											
775	Mean (KM)					1.077	SD (KM)					0.844
776	Variance (KM)					0.712	SE of Mean (KM)					0.102
777	k hat (KM)					1.628	k star (KM)					1.567
778	nu hat (KM)					224.7	nu star (KM)					216.3
779	theta hat (KM)					0.661	theta star (KM)					0.687
780	80% gamma percentile (KM)					1.659	90% gamma percentile (KM)					2.221
781	95% gamma percentile (KM)					2.765	99% gamma percentile (KM)					3.991
782												
783	The following statistics are computed using gamma distribution and KM estimates											
784	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
785					WH	HW					WH	HW
786	95% Approx. Gamma UTL with 95% Coverage				3.301	3.491	95% Approx. Gamma UPL				2.779	2.886
787	95% KM Gamma Percentile				2.724	2.823	95% Gamma USL				5.665	6.415
788												
789	Lognormal GOF Test on Detected Observations Only											
790	Shapiro Wilk Approximate Test Statistic					0.963	Shapiro Wilk GOF Test					
791	5% Shapiro Wilk P Value					0.118	Detected Data appear Lognormal at 5% Significance Level					
792	Lilliefors Test Statistic					0.079	Lilliefors GOF Test					
793	5% Lilliefors Critical Value					0.109	Detected Data appear Lognormal at 5% Significance Level					
794	Detected Data appear Lognormal at 5% Significance Level											
795												
796	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
797	Mean in Original Scale					1.079	Mean in Log Scale					-0.253
798	SD in Original Scale					0.848	SD in Log Scale					0.873
799	95% UTL95% Coverage					4.402	95% BCA UTL95% Coverage					3.12
800	95% Bootstrap (%) UTL95% Coverage					3.2	95% UPL (t)					3.363

	A	B	C	D	E	F	G	H	I	J	K	L
801	90% Percentile (z)					2.376	95% Percentile (z)					3.262
802	99% Percentile (z)					5.913	95% USL					11.4
803												
804	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
805	KM Mean of Logged Data					-0.273	95% KM UTL (Lognormal)95% Coverage					4.679
806	KM SD of Logged Data					0.913	95% KM UPL (Lognormal)					3.53
807	95% KM Percentile Lognormal (z)					3.42	95% KM USL (Lognormal)					12.67
808												
809	Background DL/2 Statistics Assuming Lognormal Distribution											
810	Mean in Original Scale					1.076	Mean in Log Scale					-0.277
811	SD in Original Scale					0.851	SD in Log Scale					0.925
812	95% UTL95% Coverage					4.77	95% UPL (t)					3.586
813	90% Percentile (z)					2.481	95% Percentile (z)					3.472
814	99% Percentile (z)					6.523	95% USL					13.09
815	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
816												
817	Nonparametric Distribution Free Background Statistics											
818	Data appear to follow a Discernible Distribution at 5% Significance Level											
819												
820	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
821	Order of Statistic, r					68	95% UTL with95% Coverage					3.2
822	Approx, f used to compute achieved CC					1.789	Approximate Actual Confidence Coefficient achieved by UTL					0.866
823	Approximate Sample Size needed to achieve specified CC					93	95% UPL					3
824	95% USL					3.5	95% KM Chebyshev UPL					4.783
825												
826	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
827	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
828	and consists of observations collected from clean unimpacted locations.											
829	The use of USL tends to provide a balance between false positives and false negatives provided the data											
830	represents a background data set and when many onsite observations need to be compared with the BTV.											
831												
832	IRON, DISSOLVED											
833												
834	General Statistics											
835	Total Number of Observations					106	Number of Missing Observations					29
836	Number of Distinct Observations					15						
837	Number of Detects					16	Number of Non-Detects					90
838	Number of Distinct Detects					13	Number of Distinct Non-Detects					3
839	Minimum Detect					0.06	Minimum Non-Detect					0.02
840	Maximum Detect					1.2	Maximum Non-Detect					0.06
841	Variance Detected					0.139	Percent Non-Detects					84.91%
842	Mean Detected					0.344	SD Detected					0.373
843	Mean of Detected Logged Data					-1.598	SD of Detected Logged Data					1.058
844												
845	Critical Values for Background Threshold Values (BTVs)											
846	Tolerance Factor K (For UTL)					1.915	d2max (for USL)					3.229
847												
848	Normal GOF Test on Detects Only											
849	Shapiro Wilk Test Statistic					0.767	Shapiro Wilk GOF Test					
850	5% Shapiro Wilk Critical Value					0.887	Data Not Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L	
851	Lilliefors Test Statistic					0.27	Lilliefors GOF Test						
852	5% Lilliefors Critical Value					0.213	Data Not Normal at 5% Significance Level						
853	Data Not Normal at 5% Significance Level												
854													
855	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
856	KM Mean					0.069	KM SD					0.182	
857	95% UTL95% Coverage					0.418	95% KM UPL (t)					0.373	
858	90% KM Percentile (z)					0.303	95% KM Percentile (z)					0.369	
859	99% KM Percentile (z)					0.493	95% KM USL					0.658	
860													
861	DL/2 Substitution Background Statistics Assuming Normal Distribution												
862	Mean					0.077	SD					0.181	
863	95% UTL95% Coverage					0.424	95% UPL (t)					0.379	
864	90% Percentile (z)					0.309	95% Percentile (z)					0.375	
865	99% Percentile (z)					0.498	95% USL					0.662	
866	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
867													
868	Gamma GOF Tests on Detected Observations Only												
869	A-D Test Statistic					0.88	Anderson-Darling GOF Test						
870	5% A-D Critical Value					0.762	Data Not Gamma Distributed at 5% Significance Level						
871	K-S Test Statistic					0.243	Kolmogorov-Smirnov GOF						
872	5% K-S Critical Value					0.221	Data Not Gamma Distributed at 5% Significance Level						
873	Data Not Gamma Distributed at 5% Significance Level												
874													
875	Gamma Statistics on Detected Data Only												
876	k hat (MLE)					1.075	k star (bias corrected MLE)					0.915	
877	Theta hat (MLE)					0.32	Theta star (bias corrected MLE)					0.376	
878	nu hat (MLE)					34.4	nu star (bias corrected)					29.29	
879	MLE Mean (bias corrected)					0.344							
880	MLE Sd (bias corrected)					0.36	95% Percentile of Chisquare (2kstar)					5.659	
881													
882	Gamma ROS Statistics using Imputed Non-Detects												
883	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
884	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
885	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
886	This is especially true when the sample size is small.												
887	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
888	Minimum					0.01	Mean					0.0605	
889	Maximum					1.2	Median					0.01	
890	SD					0.185	CV					3.067	
891	k hat (MLE)					0.476	k star (bias corrected MLE)					0.469	
892	Theta hat (MLE)					0.127	Theta star (bias corrected MLE)					0.129	
893	nu hat (MLE)					100.8	nu star (bias corrected)					99.32	
894	MLE Mean (bias corrected)					0.0605	MLE Sd (bias corrected)					0.0883	
895	95% Percentile of Chisquare (2kstar)					3.684	90% Percentile					0.166	
896	95% Percentile					0.238	99% Percentile					0.416	
897	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
898	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
899					WH	HW					WH	HW	
900	95% Approx. Gamma UTL with 95% Coverage				0.221	0.199	95% Approx. Gamma UPL				0.177	0.157	

	A	B	C	D	E	F	G	H	I	J	K	L
901	95% Gamma USL				0.569	0.573						
902												
903	Estimates of Gamma Parameters using KM Estimates											
904	Mean (KM)				0.069	SD (KM)				0.182		
905	Variance (KM)				0.0332	SE of Mean (KM)				0.0183		
906	k hat (KM)				0.143	k star (KM)				0.145		
907	nu hat (KM)				30.35	nu star (KM)				30.82		
908	theta hat (KM)				0.482	theta star (KM)				0.474		
909	80% gamma percentile (KM)				0.0731	90% gamma percentile (KM)				0.204		
910	95% gamma percentile (KM)				0.382	99% gamma percentile (KM)				0.903		
911												
912	The following statistics are computed using gamma distribution and KM estimates											
913	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
914				WH	HW					WH	HW	
915	95% Approx. Gamma UTL with 95% Coverage			0.236	0.216	95% Approx. Gamma UPL				0.195	0.177	
916	95% KM Gamma Percentile			0.192	0.173	95% Gamma USL				0.55	0.544	
917												
918	Lognormal GOF Test on Detected Observations Only											
919	Shapiro Wilk Test Statistic				0.892	Shapiro Wilk GOF Test						
920	5% Shapiro Wilk Critical Value				0.887	Detected Data appear Lognormal at 5% Significance Level						
921	Lilliefors Test Statistic				0.198	Lilliefors GOF Test						
922	5% Lilliefors Critical Value				0.213	Detected Data appear Lognormal at 5% Significance Level						
923	Detected Data appear Lognormal at 5% Significance Level											
924												
925	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
926	Mean in Original Scale				0.0575	Mean in Log Scale				-5.746		
927	SD in Original Scale				0.187	SD in Log Scale				2.628		
928	95% UTL95% Coverage				0.489	95% BCA UTL95% Coverage				0.665		
929	95% Bootstrap (%) UTL95% Coverage				0.665	95% UPL (t)				0.256		
930	90% Percentile (z)				0.0927	95% Percentile (z)				0.241		
931	99% Percentile (z)				1.444	95% USL				15.5		
932												
933	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
934	KM Mean of Logged Data				-3.563	95% KM UTL (Lognormal)95% Coverage				0.165		
935	KM SD of Logged Data				0.919	95% KM UPL (Lognormal)				0.131		
936	95% KM Percentile Lognormal (z)				0.129	95% KM USL (Lognormal)				0.551		
937												
938	Background DL/2 Statistics Assuming Lognormal Distribution											
939	Mean in Original Scale				0.077	Mean in Log Scale				-3.239		
940	SD in Original Scale				0.181	SD in Log Scale				0.81		
941	95% UTL95% Coverage				0.185	95% UPL (t)				0.151		
942	90% Percentile (z)				0.111	95% Percentile (z)				0.149		
943	99% Percentile (z)				0.258	95% USL				0.536		
944	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
945												
946	Nonparametric Distribution Free Background Statistics											
947	Data appear to follow a Discernible Distribution at 5% Significance Level											
948												
949	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
950	Order of Statistic, r				104	95% UTL with95% Coverage				0.69		

	A	B	C	D	E	F	G	H	I	J	K	L
951	Approx, f used to compute achieved CC					1.825	Approximate Actual Confidence Coefficient achieved by UTL					0.904
952	Approximate Sample Size needed to achieve specified CC					124	95% UPL					0.448
953	95% USL					1.2	95% KM Chebyshev UPL					0.867
954												
955	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
956	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
957	and consists of observations collected from clean unimpacted locations.											
958	The use of USL tends to provide a balance between false positives and false negatives provided the data											
959	represents a background data set and when many onsite observations need to be compared with the BTV.											
960												
961	MAGNESIUM, TOTAL											
962												
963	General Statistics											
964	Total Number of Observations					45	Number of Distinct Observations					26
965							Number of Missing Observations					90
966	Minimum					8.9	First Quartile					10
967	Second Largest					12.5	Median					11
968	Maximum					12.5	Third Quartile					11.8
969	Mean					10.97	SD					0.986
970	Coefficient of Variation					0.0899	Skewness					-0.245
971	Mean of logged Data					2.391	SD of logged Data					0.0914
972												
973	Critical Values for Background Threshold Values (BTVs)											
974	Tolerance Factor K (For UTL)					2.085	d2max (for USL)					2.915
975												
976	Normal GOF Test											
977	Shapiro Wilk Test Statistic					0.94	Shapiro Wilk GOF Test					
978	5% Shapiro Wilk Critical Value					0.945	Data Not Normal at 5% Significance Level					
979	Lilliefors Test Statistic					0.138	Lilliefors GOF Test					
980	5% Lilliefors Critical Value					0.131	Data Not Normal at 5% Significance Level					
981	Data Not Normal at 5% Significance Level											
982												
983	Background Statistics Assuming Normal Distribution											
984	95% UTL with		95% Coverage		13.03	90% Percentile (z)					12.24	
985			95% UPL (t)		12.65	95% Percentile (z)					12.59	
986			95% USL		13.85	99% Percentile (z)					13.27	
987												
988	Gamma GOF Test											
989	A-D Test Statistic					0.835	Anderson-Darling Gamma GOF Test					
990	5% A-D Critical Value					0.747	Data Not Gamma Distributed at 5% Significance Level					
991	K-S Test Statistic					0.144	Kolmogorov-Smirnov Gamma GOF Test					
992	5% K-S Critical Value					0.131	Data Not Gamma Distributed at 5% Significance Level					
993	Data Not Gamma Distributed at 5% Significance Level											
994												
995	Gamma Statistics											
996	k hat (MLE)					123.9	k star (bias corrected MLE)					115.7
997	Theta hat (MLE)					0.0885	Theta star (bias corrected MLE)					0.0948
998	nu hat (MLE)					11153	nu star (bias corrected)					10410
999	MLE Mean (bias corrected)					10.97	MLE Sd (bias corrected)					1.02
1000												

	A	B	C	D	E	F	G	H	I	J	K	L
1001	Background Statistics Assuming Gamma Distribution											
1002	95% Wilson Hilferty (WH) Approx. Gamma UPL				12.72					90% Percentile		12.3
1003	95% Hawkins Wixley (HW) Approx. Gamma UPL				12.73					95% Percentile		12.7
1004	95% WH Approx. Gamma UTL with 95% Coverage				13.15					99% Percentile		13.48
1005	95% HW Approx. Gamma UTL with 95% Coverage				13.17							
1006	95% WH USL				14.11					95% HW USL		14.14
1007												
1008	Lognormal GOF Test											
1009	Shapiro Wilk Test Statistic				0.936	Shapiro Wilk Lognormal GOF Test						
1010	5% Shapiro Wilk Critical Value				0.945	Data Not Lognormal at 5% Significance Level						
1011	Lilliefors Test Statistic				0.143	Lilliefors Lognormal GOF Test						
1012	5% Lilliefors Critical Value				0.131	Data Not Lognormal at 5% Significance Level						
1013	Data Not Lognormal at 5% Significance Level											
1014												
1015	Background Statistics assuming Lognormal Distribution											
1016	95% UTL with 95% Coverage				13.22					90% Percentile (z)		12.29
1017	95% UPL (t)				12.76					95% Percentile (z)		12.7
1018	95% USL				14.26					99% Percentile (z)		13.52
1019												
1020	Nonparametric Distribution Free Background Statistics											
1021	Data do not follow a Discernible Distribution (0.05)											
1022												
1023	Nonparametric Upper Limits for Background Threshold Values											
1024	Order of Statistic, r				44					95% UTL with 95% Coverage		12.5
1025	Approx, f used to compute achieved CC				1.158					Approximate Actual Confidence Coefficient achieved by UTL		0.665
1026										Approximate Sample Size needed to achieve specified CC		93
1027	95% Percentile Bootstrap UTL with 95% Coverage				12.5					95% BCA Bootstrap UTL with 95% Coverage		12.5
1028	95% UPL				12.47					90% Percentile		12.1
1029	90% Chebyshev UPL				13.96					95% Percentile		12.38
1030	95% Chebyshev UPL				15.32					99% Percentile		12.5
1031	95% USL				12.5							
1032												
1033	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1034	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1035	and consists of observations collected from clean unimpacted locations.											
1036	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1037	represents a background data set and when many onsite observations need to be compared with the BTV.											
1038												
1039	MAGNESIUM, DISSOLVED											
1040												
1041	General Statistics											
1042	Total Number of Observations				78					Number of Distinct Observations		35
1043										Number of Missing Observations		57
1044	Minimum				7.9					First Quartile		10.6
1045	Second Largest				12.9					Median		11.1
1046	Maximum				12.9					Third Quartile		11.5
1047	Mean				10.93					SD		0.97
1048	Coefficient of Variation				0.0888					Skewness		-0.805
1049	Mean of logged Data				2.387					SD of logged Data		0.0932
1050												

	A	B	C	D	E	F	G	H	I	J	K	L	
1051	Critical Values for Background Threshold Values (BTVs)												
1052	Tolerance Factor K (For UTL)				1.965						d2max (for USL)		3.123
1053													
1054	Normal GOF Test												
1055	Shapiro Wilk Test Statistic				0.945		Normal GOF Test						
1056	5% Shapiro Wilk P Value				0.00461		Data Not Normal at 5% Significance Level						
1057	Lilliefors Test Statistic				0.14		Lilliefors GOF Test						
1058	5% Lilliefors Critical Value				0.1		Data Not Normal at 5% Significance Level						
1059	Data Not Normal at 5% Significance Level												
1060													
1061	Background Statistics Assuming Normal Distribution												
1062	95% UTL with		95% Coverage		12.83						90% Percentile (z)		12.17
1063			95% UPL (t)		12.55						95% Percentile (z)		12.52
1064			95% USL		13.96						99% Percentile (z)		13.19
1065													
1066	Gamma GOF Test												
1067	A-D Test Statistic				1.782		Anderson-Darling Gamma GOF Test						
1068	5% A-D Critical Value				0.749		Data Not Gamma Distributed at 5% Significance Level						
1069	K-S Test Statistic				0.153		Kolmogorov-Smirnov Gamma GOF Test						
1070	5% K-S Critical Value				0.101		Data Not Gamma Distributed at 5% Significance Level						
1071	Data Not Gamma Distributed at 5% Significance Level												
1072													
1073	Gamma Statistics												
1074			k hat (MLE)		120.8						k star (bias corrected MLE)		116.2
1075			Theta hat (MLE)		0.0904						Theta star (bias corrected MLE)		0.094
1076			nu hat (MLE)		18852						nu star (bias corrected)		18128
1077			MLE Mean (bias corrected)		10.93						MLE Sd (bias corrected)		1.014
1078													
1079	Background Statistics Assuming Gamma Distribution												
1080	95% Wilson Hilferty (WH) Approx. Gamma UPL				12.66						90% Percentile		12.25
1081	95% Hawkins Wixley (HW) Approx. Gamma UPL				12.67						95% Percentile		12.65
1082	95% WH Approx. Gamma UTL with		95% Coverage		12.98						99% Percentile		13.42
1083	95% HW Approx. Gamma UTL with		95% Coverage		13								
1084			95% WH USL		14.32						95% HW USL		14.38
1085													
1086	Lognormal GOF Test												
1087	Shapiro Wilk Test Statistic				0.916		Shapiro Wilk Lognormal GOF Test						
1088	5% Shapiro Wilk P Value				2.3552E-5		Data Not Lognormal at 5% Significance Level						
1089	Lilliefors Test Statistic				0.159		Lilliefors Lognormal GOF Test						
1090	5% Lilliefors Critical Value				0.1		Data Not Lognormal at 5% Significance Level						
1091	Data Not Lognormal at 5% Significance Level												
1092													
1093	Background Statistics assuming Lognormal Distribution												
1094	95% UTL with		95% Coverage		13.07						90% Percentile (z)		12.26
1095			95% UPL (t)		12.72						95% Percentile (z)		12.69
1096			95% USL		14.56						99% Percentile (z)		13.52
1097													
1098	Nonparametric Distribution Free Background Statistics												
1099	Data do not follow a Discernible Distribution (0.05)												
1100													

	A	B	C	D	E	F	G	H	I	J	K	L	
1101	Nonparametric Upper Limits for Background Threshold Values												
1102	Order of Statistic, r					77	95% UTL with 95% Coverage					12.9	
1103	Approx, f used to compute achieved CC					2.026	Approximate Actual Confidence Coefficient achieved by UTL					0.907	
1104							Approximate Sample Size needed to achieve specified CC					93	
1105	95% Percentile Bootstrap UTL with 95% Coverage					12.9	95% BCA Bootstrap UTL with 95% Coverage					12.65	
1106	95% UPL					12.41	90% Percentile					12	
1107	90% Chebyshev UPL					13.86	95% Percentile					12.32	
1108	95% Chebyshev UPL					15.18	99% Percentile					12.9	
1109	95% USL					12.9							
1110													
1111	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
1112	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
1113	and consists of observations collected from clean unimpacted locations.												
1114	The use of USL tends to provide a balance between false positives and false negatives provided the data												
1115	represents a background data set and when many onsite observations need to be compared with the BTV.												
1116													
1117	MANGANESE, TOTAL												
1118													
1119	General Statistics												
1120	Total Number of Observations					72	Number of Missing Observations					63	
1121	Number of Distinct Observations					13							
1122	Number of Detects					69	Number of Non-Detects					3	
1123	Number of Distinct Detects					13	Number of Distinct Non-Detects					3	
1124	Minimum Detect					0.03	Minimum Non-Detect					0.04	
1125	Maximum Detect					0.15	Maximum Non-Detect					0.06	
1126	Variance Detected					7.9705E-4	Percent Non-Detects					4.167%	
1127	Mean Detected					0.0665	SD Detected					0.0282	
1128	Mean of Detected Logged Data					-2.788	SD of Detected Logged Data					0.386	
1129													
1130	Critical Values for Background Threshold Values (BTVs)												
1131	Tolerance Factor K (For UTL)					1.98	d2max (for USL)					3.094	
1132													
1133	Normal GOF Test on Detects Only												
1134	Shapiro Wilk Test Statistic					0.854	Normal GOF Test on Detected Observations Only						
1135	5% Shapiro Wilk P Value					4.5265E-9	Data Not Normal at 5% Significance Level						
1136	Lilliefors Test Statistic					0.213	Lilliefors GOF Test						
1137	5% Lilliefors Critical Value					0.107	Data Not Normal at 5% Significance Level						
1138	Data Not Normal at 5% Significance Level												
1139													
1140	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
1141	KM Mean					0.0653	KM SD					0.0281	
1142	95% UTL95% Coverage					0.121	95% KM UPL (t)					0.112	
1143	90% KM Percentile (z)					0.101	95% KM Percentile (z)					0.111	
1144	99% KM Percentile (z)					0.131	95% KM USL					0.152	
1145													
1146	DL/2 Substitution Background Statistics Assuming Normal Distribution												
1147	Mean					0.0648	SD					0.0289	
1148	95% UTL95% Coverage					0.122	95% UPL (t)					0.113	
1149	90% Percentile (z)					0.102	95% Percentile (z)					0.112	
1150	99% Percentile (z)					0.132	95% USL					0.154	

	A	B	C	D	E	F	G	H	I	J	K	L	
1151	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
1152													
1153	Gamma GOF Tests on Detected Observations Only												
1154	A-D Test Statistic				2.275	Anderson-Darling GOF Test							
1155	5% A-D Critical Value				0.753	Data Not Gamma Distributed at 5% Significance Level							
1156	K-S Test Statistic				0.208	Kolmogorov-Smirnov GOF							
1157	5% K-S Critical Value				0.107	Data Not Gamma Distributed at 5% Significance Level							
1158	Data Not Gamma Distributed at 5% Significance Level												
1159													
1160	Gamma Statistics on Detected Data Only												
1161	k hat (MLE)				6.616	k star (bias corrected MLE)				6.338			
1162	Theta hat (MLE)				0.0101	Theta star (bias corrected MLE)				0.0105			
1163	nu hat (MLE)				913	nu star (bias corrected)				874.6			
1164	MLE Mean (bias corrected)				0.0665	95% Percentile of Chisquare (2kstar)							21.93
1165	MLE Sd (bias corrected)				0.0264								
1166													
1167	Gamma ROS Statistics using Imputed Non-Detects												
1168	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
1169	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
1170	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
1171	This is especially true when the sample size is small.												
1172	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
1173	Minimum				0.0192	Mean				0.0651			
1174	Maximum				0.15	Median				0.05			
1175	SD				0.0285	CV				0.438			
1176	k hat (MLE)				6.05	k star (bias corrected MLE)				5.807			
1177	Theta hat (MLE)				0.0108	Theta star (bias corrected MLE)				0.0112			
1178	nu hat (MLE)				871.2	nu star (bias corrected)				836.2			
1179	MLE Mean (bias corrected)				0.0651	MLE Sd (bias corrected)				0.027			
1180	95% Percentile of Chisquare (2kstar)				20.51	90% Percentile				0.101			
1181	95% Percentile				0.115	99% Percentile				0.144			
1182	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
1183	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1184				WH	HW					WH	HW		
1185	95% Approx. Gamma UTL with 95% Coverage			0.128	0.129	95% Approx. Gamma UPL				0.115	0.116		
1186	95% Gamma USL			0.18	0.186								
1187													
1188	Estimates of Gamma Parameters using KM Estimates												
1189	Mean (KM)				0.0653	SD (KM)				0.0281			
1190	Variance (KM)				7.8812E-4	SE of Mean (KM)				0.00333			
1191	k hat (KM)				5.412	k star (KM)				5.196			
1192	nu hat (KM)				779.4	nu star (KM)				748.2			
1193	theta hat (KM)				0.0121	theta star (KM)				0.0126			
1194	80% gamma percentile (KM)				0.0874	90% gamma percentile (KM)				0.104			
1195	95% gamma percentile (KM)				0.118	99% gamma percentile (KM)				0.15			
1196													
1197	The following statistics are computed using gamma distribution and KM estimates												
1198	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1199				WH	HW					WH	HW		
1200	95% Approx. Gamma UTL with 95% Coverage			0.126	0.127	95% Approx. Gamma UPL				0.114	0.114		

	A	B	C	D	E	F	G	H	I	J	K	L
1201	95% KM Gamma Percentile				0.113	0.113	95% Gamma USL				0.176	0.181
1202												
1203	Lognormal GOF Test on Detected Observations Only											
1204	Shapiro Wilk Approximate Test Statistic				0.926	Shapiro Wilk GOF Test						
1205	5% Shapiro Wilk P Value				4.4410E-4	Data Not Lognormal at 5% Significance Level						
1206	Lilliefors Test Statistic				0.198	Lilliefors GOF Test						
1207	5% Lilliefors Critical Value				0.107	Data Not Lognormal at 5% Significance Level						
1208	Data Not Lognormal at 5% Significance Level											
1209												
1210	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1211	Mean in Original Scale				0.0653	Mean in Log Scale				-2.81		
1212	SD in Original Scale				0.0283	SD in Log Scale				0.395		
1213	95% UTL95% Coverage				0.132	95% BCA UTL95% Coverage				0.134		
1214	95% Bootstrap (%) UTL95% Coverage				0.139	95% UPL (t)				0.117		
1215	90% Percentile (z)				0.0999	95% Percentile (z)				0.115		
1216	99% Percentile (z)				0.151	95% USL				0.205		
1217												
1218	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1219	KM Mean of Logged Data				-2.809	95% KM UTL (Lognormal)95% Coverage				0.131		
1220	KM SD of Logged Data				0.391	95% KM UPL (Lognormal)				0.116		
1221	95% KM Percentile Lognormal (z)				0.115	95% KM USL (Lognormal)				0.202		
1222												
1223	Background DL/2 Statistics Assuming Lognormal Distribution											
1224	Mean in Original Scale				0.0648	Mean in Log Scale				-2.826		
1225	SD in Original Scale				0.0289	SD in Log Scale				0.422		
1226	95% UTL95% Coverage				0.137	95% UPL (t)				0.12		
1227	90% Percentile (z)				0.102	95% Percentile (z)				0.119		
1228	99% Percentile (z)				0.158	95% USL				0.218		
1229	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1230												
1231	Nonparametric Distribution Free Background Statistics											
1232	Data do not follow a Discernible Distribution (0.05)											
1233												
1234	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1235	Order of Statistic, r				71	95% UTL with95% Coverage				0.15		
1236	Approx, f used to compute achieved CC				1.868	Approximate Actual Confidence Coefficient achieved by UTL				0.881		
1237	Approximate Sample Size needed to achieve specified CC				93	95% UPL				0.124		
1238	95% USL				0.15	95% KM Chebyshev UPL				0.189		
1239												
1240	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1241	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1242	and consists of observations collected from clean unimpacted locations.											
1243	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1244	represents a background data set and when many onsite observations need to be compared with the BTV.											
1245												
1246	MANGANESE, DISSOLVED											
1247												
1248	General Statistics											
1249	Total Number of Observations				106	Number of Distinct Observations				16		
1250						Number of Missing Observations				29		

	A	B	C	D	E	F	G	H	I	J	K	L
1251	Minimum					0.03	First Quartile					0.05
1252	Second Largest					0.16	Median					0.06
1253	Maximum					0.17	Third Quartile					0.07
1254	Mean					0.0653	SD					0.0266
1255	Coefficient of Variation					0.407	Skewness					1.828
1256	Mean of logged Data					-2.794	SD of logged Data					0.347
1257												
1258	Critical Values for Background Threshold Values (BTVs)											
1259	Tolerance Factor K (For UTL)					1.915	d2max (for USL)					3.229
1260												
1261	Normal GOF Test											
1262	Shapiro Wilk Test Statistic					0.805	Normal GOF Test					
1263	5% Shapiro Wilk P Value					0	Data Not Normal at 5% Significance Level					
1264	Lilliefors Test Statistic					0.267	Lilliefors GOF Test					
1265	5% Lilliefors Critical Value					0.0863	Data Not Normal at 5% Significance Level					
1266	Data Not Normal at 5% Significance Level											
1267												
1268	Background Statistics Assuming Normal Distribution											
1269	95% UTL with	95% Coverage			0.116	90% Percentile (z)					0.0993	
1270		95% UPL (t)			0.11	95% Percentile (z)					0.109	
1271		95% USL			0.151	99% Percentile (z)					0.127	
1272												
1273	Gamma GOF Test											
1274	A-D Test Statistic					4.149	Anderson-Darling Gamma GOF Test					
1275	5% A-D Critical Value					0.753	Data Not Gamma Distributed at 5% Significance Level					
1276	K-S Test Statistic					0.233	Kolmogorov-Smirnov Gamma GOF Test					
1277	5% K-S Critical Value					0.0879	Data Not Gamma Distributed at 5% Significance Level					
1278	Data Not Gamma Distributed at 5% Significance Level											
1279												
1280	Gamma Statistics											
1281	k hat (MLE)					7.846	k star (bias corrected MLE)					7.631
1282	Theta hat (MLE)					0.00832	Theta star (bias corrected MLE)					0.00855
1283	nu hat (MLE)					1663	nu star (bias corrected)					1618
1284	MLE Mean (bias corrected)					0.0653	MLE Sd (bias corrected)					0.0236
1285												
1286	Background Statistics Assuming Gamma Distribution											
1287	95% Wilson Hilferty (WH) Approx. Gamma UPL					0.108	90% Percentile					0.0968
1288	95% Hawkins Wixley (HW) Approx. Gamma UPL					0.108	95% Percentile					0.108
1289	95% WH Approx. Gamma UTL with	95% Coverage			0.117	99% Percentile					0.132	
1290	95% HW Approx. Gamma UTL with	95% Coverage			0.117							
1291	95% WH USL					0.168	95% HW USL					0.172
1292												
1293	Lognormal GOF Test											
1294	Shapiro Wilk Test Statistic					0.918	Shapiro Wilk Lognormal GOF Test					
1295	5% Shapiro Wilk P Value					3.0527E-7	Data Not Lognormal at 5% Significance Level					
1296	Lilliefors Test Statistic					0.211	Lilliefors Lognormal GOF Test					
1297	5% Lilliefors Critical Value					0.0863	Data Not Lognormal at 5% Significance Level					
1298	Data Not Lognormal at 5% Significance Level											
1299												
1300	Background Statistics assuming Lognormal Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
1301	95% UTL with 95% Coverage					0.119	90% Percentile (z)					0.0953
1302	95% UPL (t)					0.109	95% Percentile (z)					0.108
1303	95% USL					0.187	99% Percentile (z)					0.137
1304												
1305	Nonparametric Distribution Free Background Statistics											
1306	Data do not follow a Discernible Distribution (0.05)											
1307												
1308	Nonparametric Upper Limits for Background Threshold Values											
1309	Order of Statistic, r					104	95% UTL with 95% Coverage					0.15
1310	Approx, f used to compute achieved CC					1.825	Approximate Actual Confidence Coefficient achieved by UTL					0.904
1311							Approximate Sample Size needed to achieve specified CC					124
1312	95% Percentile Bootstrap UTL with 95% Coverage					0.148	95% BCA Bootstrap UTL with 95% Coverage					0.14
1313	95% UPL					0.127	90% Percentile					0.1
1314	90% Chebyshev UPL					0.145	95% Percentile					0.118
1315	95% Chebyshev UPL					0.182	99% Percentile					0.16
1316	95% USL					0.17						
1317												
1318	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1319	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1320	and consists of observations collected from clean unimpacted locations.											
1321	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1322	represents a background data set and when many onsite observations need to be compared with the BTV.											
1323												
1324	NITRATE-NITROGEN											
1325												
1326	General Statistics											
1327	Total Number of Observations					131	Number of Missing Observations					4
1328	Number of Distinct Observations					49						
1329	Number of Detects					128	Number of Non-Detects					3
1330	Number of Distinct Detects					49	Number of Distinct Non-Detects					3
1331	Minimum Detect					13.6	Minimum Non-Detect					21
1332	Maximum Detect					24.9	Maximum Non-Detect					23
1333	Variance Detected					4.503	Percent Non-Detects					2.29%
1334	Mean Detected					20.56	SD Detected					2.122
1335	Mean of Detected Logged Data					3.018	SD of Detected Logged Data					0.108
1336												
1337	Critical Values for Background Threshold Values (BTVs)											
1338	Tolerance Factor K (For UTL)					1.885	d2max (for USL)					3.299
1339												
1340	Normal GOF Test on Detects Only											
1341	Shapiro Wilk Test Statistic					0.965	Normal GOF Test on Detected Observations Only					
1342	5% Shapiro Wilk P Value					0.0253	Data Not Normal at 5% Significance Level					
1343	Lilliefors Test Statistic					0.097	Lilliefors GOF Test					
1344	5% Lilliefors Critical Value					0.0787	Data Not Normal at 5% Significance Level					
1345	Data Not Normal at 5% Significance Level											
1346												
1347	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1348	KM Mean					20.54	KM SD					2.113
1349	95% UTL95% Coverage					24.52	95% KM UPL (t)					24.05
1350	90% KM Percentile (z)					23.25	95% KM Percentile (z)					24.02

	A	B	C	D	E	F	G	H	I	J	K	L	
1351	99% KM Percentile (z)					25.46	95% KM USL					27.51	
1352													
1353	DL/2 Substitution Background Statistics Assuming Normal Distribution												
1354	Mean					20.35	SD					2.543	
1355	95% UTL95% Coverage					25.14	95% UPL (t)					24.57	
1356	90% Percentile (z)					23.6	95% Percentile (z)					24.53	
1357	99% Percentile (z)					26.26	95% USL					28.73	
1358	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
1359													
1360	Gamma GOF Tests on Detected Observations Only												
1361	A-D Test Statistic					1.415	Anderson-Darling GOF Test						
1362	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level						
1363	K-S Test Statistic					0.108	Kolmogorov-Smirnov GOF						
1364	5% K-S Critical Value					0.082	Data Not Gamma Distributed at 5% Significance Level						
1365	Data Not Gamma Distributed at 5% Significance Level												
1366													
1367	Gamma Statistics on Detected Data Only												
1368	k hat (MLE)					89.55	k star (bias corrected MLE)					87.45	
1369	Theta hat (MLE)					0.23	Theta star (bias corrected MLE)					0.235	
1370	nu hat (MLE)					22924	nu star (bias corrected)					22388	
1371	MLE Mean (bias corrected)					20.56							
1372	MLE Sd (bias corrected)					2.199	95% Percentile of Chisquare (2kstar)					206.8	
1373													
1374	Gamma ROS Statistics using Imputed Non-Detects												
1375	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
1376	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
1377	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
1378	This is especially true when the sample size is small.												
1379	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
1380	Minimum					13.6	Mean					20.54	
1381	Maximum					24.9	Median					21	
1382	SD					2.103	CV					0.102	
1383	k hat (MLE)					91.14	k star (bias corrected MLE)					89.06	
1384	Theta hat (MLE)					0.225	Theta star (bias corrected MLE)					0.231	
1385	nu hat (MLE)					23878	nu star (bias corrected)					23333	
1386	MLE Mean (bias corrected)					20.54	MLE Sd (bias corrected)					2.177	
1387	95% Percentile of Chisquare (2kstar)					210.3	90% Percentile					23.38	
1388	95% Percentile					24.25	99% Percentile					25.94	
1389	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
1390	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1391						WH	HW					WH	HW
1392	95% Approx. Gamma UTL with 95% Coverage					24.8	24.85	95% Approx. Gamma UPL				24.26	24.3
1393	95% Gamma USL					28.43	28.58						
1394													
1395	Estimates of Gamma Parameters using KM Estimates												
1396	Mean (KM)					20.54	SD (KM)					2.113	
1397	Variance (KM)					4.466	SE of Mean (KM)					0.187	
1398	k hat (KM)					94.48	k star (KM)					92.32	
1399	nu hat (KM)					24753	nu star (KM)					24187	
1400	theta hat (KM)					0.217	theta star (KM)					0.222	

	A	B	C	D	E	F	G	H	I	J	K	L
1401					80% gamma percentile (KM)	22.31					90% gamma percentile (KM)	23.32
1402					95% gamma percentile (KM)	24.18					99% gamma percentile (KM)	25.84
1403												
1404	The following statistics are computed using gamma distribution and KM estimates											
1405	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1406					WH	HW					WH	HW
1407				95% Approx. Gamma UTL with 95% Coverage	24.83	24.87				95% Approx. Gamma UPL	24.28	24.32
1408				95% KM Gamma Percentile	24.24	24.27				95% Gamma USL	28.48	28.62
1409												
1410	Lognormal GOF Test on Detected Observations Only											
1411					Shapiro Wilk Approximate Test Statistic	0.945				Shapiro Wilk GOF Test		
1412					5% Shapiro Wilk P Value	7.1079E-5				Data Not Lognormal at 5% Significance Level		
1413					Lilliefors Test Statistic	0.113				Lilliefors GOF Test		
1414					5% Lilliefors Critical Value	0.0787				Data Not Lognormal at 5% Significance Level		
1415	Data Not Lognormal at 5% Significance Level											
1416												
1417	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1418					Mean in Original Scale	20.54				Mean in Log Scale		3.017
1419					SD in Original Scale	2.104				SD in Log Scale		0.107
1420					95% UTL95% Coverage	24.99				95% BCA UTL95% Coverage		23.6
1421					95% Bootstrap (%) UTL95% Coverage	24				95% UPL (t)		24.4
1422					90% Percentile (z)	23.43				95% Percentile (z)		24.36
1423					99% Percentile (z)	26.2				95% USL		29.07
1424												
1425	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1426					KM Mean of Logged Data	3.017				95% KM UTL (Lognormal)95% Coverage		25.01
1427					KM SD of Logged Data	0.108				95% KM UPL (Lognormal)		24.42
1428					95% KM Percentile Lognormal (z)	24.38				95% KM USL (Lognormal)		29.12
1429												
1430	Background DL/2 Statistics Assuming Lognormal Distribution											
1431					Mean in Original Scale	20.35				Mean in Log Scale		3.004
1432					SD in Original Scale	2.543				SD in Log Scale		0.142
1433					95% UTL95% Coverage	26.34				95% UPL (t)		25.52
1434					90% Percentile (z)	24.18				95% Percentile (z)		25.45
1435					99% Percentile (z)	28.04				95% USL		32.18
1436	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1437												
1438	Nonparametric Distribution Free Background Statistics											
1439	Data do not follow a Discernible Distribution (0.05)											
1440												
1441	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1442					Order of Statistic, r	128				95% UTL with95% Coverage		24
1443					Approx, f used to compute achieved CC	1.684				Approximate Actual Confidence Coefficient achieved by UTL		0.898
1444					Approximate Sample Size needed to achieve specified CC	153				95% UPL		23.54
1445					95% USL	24.9				95% KM Chebyshev UPL		29.79
1446												
1447	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1448	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1449	and consists of observations collected from clean unimpacted locations.											
1450	The use of USL tends to provide a balance between false positives and false negatives provided the data											

	A	B	C	D	E	F	G	H	I	J	K	L
1451	represents a background data set and when many onsite observations need to be compared with the BTV.											
1452												
1453	pH-FIELD											
1454												
1455	General Statistics											
1456	Total Number of Observations				120	Number of Missing Observations				15		
1457	Number of Distinct Observations				72							
1458	Number of Detects				116	Number of Non-Detects				4		
1459	Number of Distinct Detects				68	Number of Distinct Non-Detects				4		
1460	Minimum Detect				4.15	Minimum Non-Detect				4.75		
1461	Maximum Detect				6.27	Maximum Non-Detect				5.59		
1462	Variance Detected				0.11	Percent Non-Detects				3.333%		
1463	Mean Detected				5.053	SD Detected				0.331		
1464	Mean of Detected Logged Data				1.618	SD of Detected Logged Data				0.0645		
1465												
1466	Critical Values for Background Threshold Values (BTVs)											
1467	Tolerance Factor K (For UTL)				1.897	d2max (for USL)				3.271		
1468												
1469	Normal GOF Test on Detects Only											
1470	Shapiro Wilk Test Statistic				0.921	Normal GOF Test on Detected Observations Only						
1471	5% Shapiro Wilk P Value				1.1897E-7	Data Not Normal at 5% Significance Level						
1472	Lilliefors Test Statistic				0.132	Lilliefors GOF Test						
1473	5% Lilliefors Critical Value				0.0826	Data Not Normal at 5% Significance Level						
1474	Data Not Normal at 5% Significance Level											
1475												
1476	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
1477	KM Mean				5.046	KM SD				0.331		
1478	95% UTL95% Coverage				5.673	95% KM UPL (t)				5.597		
1479	90% KM Percentile (z)				5.47	95% KM Percentile (z)				5.59		
1480	99% KM Percentile (z)				5.815	95% KM USL				6.128		
1481												
1482	DL/2 Substitution Background Statistics Assuming Normal Distribution											
1483	Mean				4.972	SD				0.545		
1484	95% UTL95% Coverage				6.006	95% UPL (t)				5.879		
1485	90% Percentile (z)				5.671	95% Percentile (z)				5.869		
1486	99% Percentile (z)				6.24	95% USL				6.755		
1487	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
1488												
1489	Gamma GOF Tests on Detected Observations Only											
1490	A-D Test Statistic				2.79	Anderson-Darling GOF Test						
1491	5% A-D Critical Value				0.75	Data Not Gamma Distributed at 5% Significance Level						
1492	K-S Test Statistic				0.122	Kolmogorov-Smirnov GOF						
1493	5% K-S Critical Value				0.0851	Data Not Gamma Distributed at 5% Significance Level						
1494	Data Not Gamma Distributed at 5% Significance Level											
1495												
1496	Gamma Statistics on Detected Data Only											
1497	k hat (MLE)				240.5	k star (bias corrected MLE)				234.3		
1498	Theta hat (MLE)				0.021	Theta star (bias corrected MLE)				0.0216		
1499	nu hat (MLE)				55793	nu star (bias corrected)				54351		
1500	MLE Mean (bias corrected)				5.053							

	A	B	C	D	E	F	G	H	I	J	K	L		
1501	MLE Sd (bias corrected)					0.33	95% Percentile of Chisquare (2kstar)					520		
1502														
1503	Gamma ROS Statistics using Imputed Non-Detects													
1504	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs													
1505	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)													
1506	For such situations, GROS method may yield incorrect values of UCLs and BTVs													
1507	This is especially true when the sample size is small.													
1508	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
1509	Minimum					4.15	Mean					5.047		
1510	Maximum					6.27	Median					5.011		
1511	SD					0.329	CV					0.0652		
1512	k hat (MLE)					243.3	k star (bias corrected MLE)					237.3		
1513	Theta hat (MLE)					0.0207	Theta star (bias corrected MLE)					0.0213		
1514	nu hat (MLE)					58401	nu star (bias corrected)					56942		
1515	MLE Mean (bias corrected)					5.047	MLE Sd (bias corrected)					0.328		
1516	95% Percentile of Chisquare (2kstar)					526.3	90% Percentile					5.471		
1517	95% Percentile					5.598	99% Percentile					5.84		
1518	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
1519	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
1520						WH	HW						WH	HW
1521	95% Approx. Gamma UTL with 95% Coverage					5.681	5.683	95% Approx. Gamma UPL					5.6	5.601
1522	95% Gamma USL					6.178	6.186							
1523														
1524	Estimates of Gamma Parameters using KM Estimates													
1525	Mean (KM)					5.046	SD (KM)					0.331		
1526	Variance (KM)					0.109	SE of Mean (KM)					0.0306		
1527	k hat (KM)					232.8	k star (KM)					227		
1528	nu hat (KM)					55874	nu star (KM)					54478		
1529	theta hat (KM)					0.0217	theta star (KM)					0.0222		
1530	80% gamma percentile (KM)					5.326	90% gamma percentile (KM)					5.48		
1531	95% gamma percentile (KM)					5.609	99% gamma percentile (KM)					5.858		
1532														
1533	The following statistics are computed using gamma distribution and KM estimates													
1534	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
1535						WH	HW						WH	HW
1536	95% Approx. Gamma UTL with 95% Coverage					5.684	5.686	95% Approx. Gamma UPL					5.602	5.603
1537	95% KM Gamma Percentile					5.595	5.596	95% Gamma USL					6.184	6.192
1538														
1539	Lognormal GOF Test on Detected Observations Only													
1540	Shapiro Wilk Approximate Test Statistic					0.936	Shapiro Wilk GOF Test							
1541	5% Shapiro Wilk P Value					1.4986E-5	Data Not Lognormal at 5% Significance Level							
1542	Lilliefors Test Statistic					0.118	Lilliefors GOF Test							
1543	5% Lilliefors Critical Value					0.0826	Data Not Lognormal at 5% Significance Level							
1544	Data Not Lognormal at 5% Significance Level													
1545														
1546	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects													
1547	Mean in Original Scale					5.047	Mean in Log Scale					1.617		
1548	SD in Original Scale					0.329	SD in Log Scale					0.064		
1549	95% UTL95% Coverage					5.687	95% BCA UTL95% Coverage					5.94		
1550	95% Bootstrap (%) UTL95% Coverage					5.941	95% UPL (t)					5.603		

	A	B	C	D	E	F	G	H	I	J	K	L
1551	90% Percentile (z)					5.467	95% Percentile (z)					5.596
1552	99% Percentile (z)					5.846	95% USL					6.21
1553												
1554	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1555	KM Mean of Logged Data					1.617	95% KM UTL (Lognormal)95% Coverage					5.691
1556	KM SD of Logged Data					0.0645	95% KM UPL (Lognormal)					5.606
1557	95% KM Percentile Lognormal (z)					5.599	95% KM USL (Lognormal)					6.218
1558												
1559	Background DL/2 Statistics Assuming Lognormal Distribution											
1560	Mean in Original Scale					4.972	Mean in Log Scale					1.596
1561	SD in Original Scale					0.545	SD in Log Scale					0.134
1562	95% UTL95% Coverage					6.361	95% UPL (t)					6.166
1563	90% Percentile (z)					5.858	95% Percentile (z)					6.15
1564	99% Percentile (z)					6.737	95% USL					7.646
1565	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1566												
1567	Nonparametric Distribution Free Background Statistics											
1568	Data do not follow a Discernible Distribution (0.05)											
1569												
1570	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1571	Order of Statistic, r					117	95% UTL with95% Coverage					5.94
1572	Approx, f used to compute achieved CC					1.539	Approximate Actual Confidence Coefficient achieved by UTL					0.856
1573	Approximate Sample Size needed to achieve specified CC					153	95% UPL					5.62
1574	95% USL					6.27	95% KM Chebyshev UPL					6.494
1575												
1576	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1577	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1578	and consists of observations collected from clean unimpacted locations.											
1579	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1580	represents a background data set and when many onsite observations need to be compared with the BTV.											
1581												
1582	pH-LAB											
1583												
1584	General Statistics											
1585	Total Number of Observations					129	Number of Missing Observations					6
1586	Number of Distinct Observations					79						
1587	Number of Detects					125	Number of Non-Detects					4
1588	Number of Distinct Detects					77	Number of Distinct Non-Detects					4
1589	Minimum Detect					4.43	Minimum Non-Detect					5.22
1590	Maximum Detect					7.08	Maximum Non-Detect					5.67
1591	Variance Detected					0.118	Percent Non-Detects					3.101%
1592	Mean Detected					5.648	SD Detected					0.343
1593	Mean of Detected Logged Data					1.729	SD of Detected Logged Data					0.06
1594												
1595	Critical Values for Background Threshold Values (BTVs)											
1596	Tolerance Factor K (For UTL)					1.887	d2max (for USL)					3.294
1597												
1598	Normal GOF Test on Detects Only											
1599	Shapiro Wilk Test Statistic					0.959	Normal GOF Test on Detected Observations Only					
1600	5% Shapiro Wilk P Value					0.00658	Data Not Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L	
1601	Lilliefors Test Statistic					0.0753	Lilliefors GOF Test						
1602	5% Lilliefors Critical Value					0.0796	Detected Data appear Normal at 5% Significance Level						
1603	Detected Data appear Approximate Normal at 5% Significance Level												
1604													
1605	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
1606	KM Mean					5.634	KM SD					0.348	
1607	95% UTL95% Coverage					6.292	95% KM UPL (t)					6.214	
1608	90% KM Percentile (z)					6.081	95% KM Percentile (z)					6.207	
1609	99% KM Percentile (z)					6.445	95% KM USL					6.782	
1610													
1611	DL/2 Substitution Background Statistics Assuming Normal Distribution												
1612	Mean					5.556	SD					0.615	
1613	95% UTL95% Coverage					6.717	95% UPL (t)					6.579	
1614	90% Percentile (z)					6.345	95% Percentile (z)					6.568	
1615	99% Percentile (z)					6.987	95% USL					7.583	
1616	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
1617													
1618	Gamma GOF Tests on Detected Observations Only												
1619	A-D Test Statistic					1.151	Anderson-Darling GOF Test						
1620	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level						
1621	K-S Test Statistic					0.0704	Kolmogorov-Smirnov GOF						
1622	5% K-S Critical Value					0.0828	Detected data appear Gamma Distributed at 5% Significance Level						
1623	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
1624													
1625	Gamma Statistics on Detected Data Only												
1626	k hat (MLE)					278	k star (bias corrected MLE)					271.3	
1627	Theta hat (MLE)					0.0203	Theta star (bias corrected MLE)					0.0208	
1628	nu hat (MLE)					69490	nu star (bias corrected)					67824	
1629	MLE Mean (bias corrected)					5.648							
1630	MLE Sd (bias corrected)					0.343	95% Percentile of Chisquare (2kstar)					597.9	
1631													
1632	Gamma ROS Statistics using Imputed Non-Detects												
1633	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
1634	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
1635	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
1636	This is especially true when the sample size is small.												
1637	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
1638	Minimum					4.43	Mean					5.633	
1639	Maximum					7.08	Median					5.58	
1640	SD					0.349	CV					0.0619	
1641	k hat (MLE)					268.1	k star (bias corrected MLE)					261.8	
1642	Theta hat (MLE)					0.021	Theta star (bias corrected MLE)					0.0215	
1643	nu hat (MLE)					69164	nu star (bias corrected)					67557	
1644	MLE Mean (bias corrected)					5.633	MLE Sd (bias corrected)					0.348	
1645	95% Percentile of Chisquare (2kstar)					578	90% Percentile					6.084	
1646	95% Percentile					6.218	99% Percentile					6.475	
1647	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
1648	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1649					WH	HW					WH	HW	
1650	95% Approx. Gamma UTL with 95% Coverage				6.303	6.305	95% Approx. Gamma UPL				6.22	6.221	

	A	B	C	D	E	F	G	H	I	J	K	L
1651	95% Gamma USL				6.842	6.85						
1652												
1653	Estimates of Gamma Parameters using KM Estimates											
1654	Mean (KM)				5.634	SD (KM)				0.348		
1655	Variance (KM)				0.121	SE of Mean (KM)				0.0311		
1656	k hat (KM)				261.4	k star (KM)				255.3		
1657	nu hat (KM)				67447	nu star (KM)				65880		
1658	theta hat (KM)				0.0216	theta star (KM)				0.0221		
1659	80% gamma percentile (KM)				5.928	90% gamma percentile (KM)				6.09		
1660	95% gamma percentile (KM)				6.226	99% gamma percentile (KM)				6.487		
1661												
1662	The following statistics are computed using gamma distribution and KM estimates											
1663	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
1664					WH	HW					WH	HW
1665	95% Approx. Gamma UTL with 95% Coverage				6.305	6.307	95% Approx. Gamma UPL				6.222	6.223
1666	95% KM Gamma Percentile				6.215	6.216	95% Gamma USL				6.844	6.853
1667												
1668	Lognormal GOF Test on Detected Observations Only											
1669	Shapiro Wilk Approximate Test Statistic				0.969	Shapiro Wilk GOF Test						
1670	5% Shapiro Wilk P Value				0.067	Detected Data appear Lognormal at 5% Significance Level						
1671	Lilliefors Test Statistic				0.0697	Lilliefors GOF Test						
1672	5% Lilliefors Critical Value				0.0796	Detected Data appear Lognormal at 5% Significance Level						
1673	Detected Data appear Lognormal at 5% Significance Level											
1674												
1675	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1676	Mean in Original Scale				5.634	Mean in Log Scale				1.727		
1677	SD in Original Scale				0.348	SD in Log Scale				0.061		
1678	95% UTL95% Coverage				6.31	95% BCA UTL95% Coverage				6.476		
1679	95% Bootstrap (%) UTL95% Coverage				6.52	95% UPL (t)				6.224		
1680	90% Percentile (z)				6.081	95% Percentile (z)				6.217		
1681	99% Percentile (z)				6.481	95% USL				6.876		
1682												
1683	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1684	KM Mean of Logged Data				1.727	95% KM UTL (Lognormal)95% Coverage				6.313		
1685	KM SD of Logged Data				0.0613	95% KM UPL (Lognormal)				6.227		
1686	95% KM Percentile Lognormal (z)				6.22	95% KM USL (Lognormal)				6.881		
1687												
1688	Background DL/2 Statistics Assuming Lognormal Distribution											
1689	Mean in Original Scale				5.556	Mean in Log Scale				1.707		
1690	SD in Original Scale				0.615	SD in Log Scale				0.142		
1691	95% UTL95% Coverage				7.197	95% UPL (t)				6.973		
1692	90% Percentile (z)				6.606	95% Percentile (z)				6.955		
1693	99% Percentile (z)				7.659	95% USL				8.784		
1694	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1695												
1696	Nonparametric Distribution Free Background Statistics											
1697	Data appear to follow a Discernible Distribution at 5% Significance Level											
1698												
1699	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1700	Order of Statistic, r				126	95% UTL with95% Coverage				6.52		

	A	B	C	D	E	F	G	H	I	J	K	L
1701	Approx, f used to compute achieved CC					1.658	Approximate Actual Confidence Coefficient achieved by UTL					0.891
1702	Approximate Sample Size needed to achieve specified CC					153	95% UPL					6.17
1703	95% USL					7.08	95% KM Chebyshev UPL					7.159
1704												
1705	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1706	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1707	and consists of observations collected from clean unimpacted locations.											
1708	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1709	represents a background data set and when many onsite observations need to be compared with the BTV.											
1710												
1711	POTASSIUM, TOTAL											
1712												
1713	General Statistics											
1714	Total Number of Observations					48	Number of Distinct Observations					20
1715							Number of Missing Observations					87
1716	Minimum					1.7	First Quartile					2.2
1717	Second Largest					3	Median					2.4
1718	Maximum					3.1	Third Quartile					2.6
1719	Mean					2.392	SD					0.296
1720	Coefficient of Variation					0.124	Skewness					0.148
1721	Mean of logged Data					0.864	SD of logged Data					0.125
1722												
1723	Critical Values for Background Threshold Values (BTVs)											
1724	Tolerance Factor K (For UTL)					2.069	d2max (for USL)					2.941
1725												
1726	Normal GOF Test											
1727	Shapiro Wilk Test Statistic					0.984	Shapiro Wilk GOF Test					
1728	5% Shapiro Wilk Critical Value					0.947	Data appear Normal at 5% Significance Level					
1729	Lilliefors Test Statistic					0.0955	Lilliefors GOF Test					
1730	5% Lilliefors Critical Value					0.127	Data appear Normal at 5% Significance Level					
1731	Data appear Normal at 5% Significance Level											
1732												
1733	Background Statistics Assuming Normal Distribution											
1734	95% UTL with		95% Coverage		3.004	90% Percentile (z)					2.771	
1735			95% UPL (t)		2.894	95% Percentile (z)					2.879	
1736			95% USL		3.262	99% Percentile (z)					3.08	
1737												
1738	Gamma GOF Test											
1739	A-D Test Statistic					0.305	Anderson-Darling Gamma GOF Test					
1740	5% A-D Critical Value					0.748	Detected data appear Gamma Distributed at 5% Significance Level					
1741	K-S Test Statistic					0.0901	Kolmogorov-Smirnov Gamma GOF Test					
1742	5% K-S Critical Value					0.127	Detected data appear Gamma Distributed at 5% Significance Level					
1743	Detected data appear Gamma Distributed at 5% Significance Level											
1744												
1745	Gamma Statistics											
1746	k hat (MLE)					66.2	k star (bias corrected MLE)					62.07
1747	Theta hat (MLE)					0.0361	Theta star (bias corrected MLE)					0.0385
1748	nu hat (MLE)					6355	nu star (bias corrected)					5959
1749	MLE Mean (bias corrected)					2.392	MLE Sd (bias corrected)					0.304
1750												

	A	B	C	D	E	F	G	H	I	J	K	L
1751	Background Statistics Assuming Gamma Distribution											
1752	95% Wilson Hilferty (WH) Approx. Gamma UPL				2.918					90% Percentile		2.788
1753	95% Hawkins Wixley (HW) Approx. Gamma UPL				2.921					95% Percentile		2.912
1754	95% WH Approx. Gamma UTL with 95% Coverage				3.046					99% Percentile		3.154
1755	95% HW Approx. Gamma UTL with 95% Coverage				3.052							
1756	95% WH USL				3.361					95% HW USL		3.376
1757												
1758	Lognormal GOF Test											
1759	Shapiro Wilk Test Statistic				0.984	Shapiro Wilk Lognormal GOF Test						
1760	5% Shapiro Wilk Critical Value				0.947	Data appear Lognormal at 5% Significance Level						
1761	Lilliefors Test Statistic				0.0978	Lilliefors Lognormal GOF Test						
1762	5% Lilliefors Critical Value				0.127	Data appear Lognormal at 5% Significance Level						
1763	Data appear Lognormal at 5% Significance Level											
1764												
1765	Background Statistics assuming Lognormal Distribution											
1766	95% UTL with 95% Coverage				3.073					90% Percentile (z)		2.786
1767	95% UPL (t)				2.933					95% Percentile (z)		2.915
1768	95% USL				3.427					99% Percentile (z)		3.174
1769												
1770	Nonparametric Distribution Free Background Statistics											
1771	Data appear Normal at 5% Significance Level											
1772												
1773	Nonparametric Upper Limits for Background Threshold Values											
1774	Order of Statistic, r				47					95% UTL with 95% Coverage		3
1775	Approx, f used to compute achieved CC				1.237	Approximate Actual Confidence Coefficient achieved by UTL						0.699
1776						Approximate Sample Size needed to achieve specified CC						93
1777	95% Percentile Bootstrap UTL with 95% Coverage				3.065					95% BCA Bootstrap UTL with 95% Coverage		3
1778	95% UPL				2.955					90% Percentile		2.751
1779	90% Chebyshev UPL				3.289					95% Percentile		2.865
1780	95% Chebyshev UPL				3.695					99% Percentile		3.053
1781	95% USL				3.1							
1782												
1783	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1784	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1785	and consists of observations collected from clean unimpacted locations.											
1786	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1787	represents a background data set and when many onsite observations need to be compared with the BTV.											
1788												
1789	POTASSIUM, DISSOLVED											
1790												
1791	General Statistics											
1792	Total Number of Observations				73					Number of Distinct Observations		35
1793										Number of Missing Observations		62
1794	Minimum				1.7					First Quartile		2.23
1795	Second Largest				3.1					Median		2.3
1796	Maximum				3.14					Third Quartile		2.5
1797	Mean				2.378					SD		0.273
1798	Coefficient of Variation				0.115					Skewness		0.695
1799	Mean of logged Data				0.86					SD of logged Data		0.113
1800												

	A	B	C	D	E	F	G	H	I	J	K	L
1801	Critical Values for Background Threshold Values (BTVs)											
1802	Tolerance Factor K (For UTL)				1.977		d2max (for USL)				3.099	
1803												
1804	Normal GOF Test											
1805	Shapiro Wilk Test Statistic				0.93		Normal GOF Test					
1806	5% Shapiro Wilk P Value				5.5474E-4		Data Not Normal at 5% Significance Level					
1807	Lilliefors Test Statistic				0.18		Lilliefors GOF Test					
1808	5% Lilliefors Critical Value				0.104		Data Not Normal at 5% Significance Level					
1809	Data Not Normal at 5% Significance Level											
1810												
1811	Background Statistics Assuming Normal Distribution											
1812	95% UTL with		95% Coverage		2.917		90% Percentile (z)				2.728	
1813			95% UPL (t)		2.836		95% Percentile (z)				2.827	
1814			95% USL		3.223		99% Percentile (z)				3.013	
1815												
1816	Gamma GOF Test											
1817	A-D Test Statistic				1.703		Anderson-Darling Gamma GOF Test					
1818	5% A-D Critical Value				0.749		Data Not Gamma Distributed at 5% Significance Level					
1819	K-S Test Statistic				0.165		Kolmogorov-Smirnov Gamma GOF Test					
1820	5% K-S Critical Value				0.104		Data Not Gamma Distributed at 5% Significance Level					
1821	Data Not Gamma Distributed at 5% Significance Level											
1822												
1823	Gamma Statistics											
1824	k hat (MLE)				79.3		k star (bias corrected MLE)				76.05	
1825	Theta hat (MLE)				0.03		Theta star (bias corrected MLE)				0.0313	
1826	nu hat (MLE)				11578		nu star (bias corrected)				11103	
1827	MLE Mean (bias corrected)				2.378		MLE Sd (bias corrected)				0.273	
1828												
1829	Background Statistics Assuming Gamma Distribution											
1830	95% Wilson Hilferty (WH) Approx. Gamma UPL				2.847		90% Percentile				2.734	
1831	95% Hawkins Wixley (HW) Approx. Gamma UPL				2.849		95% Percentile				2.844	
1832	95% WH Approx. Gamma UTL with		95% Coverage		2.939		99% Percentile				3.058	
1833	95% HW Approx. Gamma UTL with		95% Coverage		2.942							
1834	95% WH USL				3.3		95% HW USL				3.312	
1835												
1836	Lognormal GOF Test											
1837	Shapiro Wilk Test Statistic				0.948		Shapiro Wilk Lognormal GOF Test					
1838	5% Shapiro Wilk P Value				0.0112		Data Not Lognormal at 5% Significance Level					
1839	Lilliefors Test Statistic				0.158		Lilliefors Lognormal GOF Test					
1840	5% Lilliefors Critical Value				0.104		Data Not Lognormal at 5% Significance Level					
1841	Data Not Lognormal at 5% Significance Level											
1842												
1843	Background Statistics assuming Lognormal Distribution											
1844	95% UTL with		95% Coverage		2.953		90% Percentile (z)				2.73	
1845			95% UPL (t)		2.855		95% Percentile (z)				2.845	
1846			95% USL		3.351		99% Percentile (z)				3.072	
1847												
1848	Nonparametric Distribution Free Background Statistics											
1849	Data do not follow a Discernible Distribution (0.05)											
1850												

	A	B	C	D	E	F	G	H	I	J	K	L	
1851	Nonparametric Upper Limits for Background Threshold Values												
1852	Order of Statistic, r					72	95% UTL with 95% Coverage					3.1	
1853	Approx, f used to compute achieved CC					1.895	Approximate Actual Confidence Coefficient achieved by UTL					0.885	
1854							Approximate Sample Size needed to achieve specified CC					93	
1855	95% Percentile Bootstrap UTL with 95% Coverage					3.082	95% BCA Bootstrap UTL with 95% Coverage					3.082	
1856	95% UPL					3.063	90% Percentile					2.7	
1857	90% Chebyshev UPL					3.202	95% Percentile					2.964	
1858	95% Chebyshev UPL					3.575	99% Percentile					3.111	
1859	95% USL					3.14							
1860													
1861	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
1862	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
1863	and consists of observations collected from clean unimpacted locations.												
1864	The use of USL tends to provide a balance between false positives and false negatives provided the data												
1865	represents a background data set and when many onsite observations need to be compared with the BTV.												
1866													
1867	SODIUM, TOTAL												
1868													
1869	General Statistics												
1870	Total Number of Observations					77	Number of Missing Observations					58	
1871	Number of Distinct Observations					31							
1872	Number of Detects					74	Number of Non-Detects					3	
1873	Number of Distinct Detects					31	Number of Distinct Non-Detects					1	
1874	Minimum Detect					7.6	Minimum Non-Detect					11	
1875	Maximum Detect					16.4	Maximum Non-Detect					11	
1876	Variance Detected					2.657	Percent Non-Detects					3.896%	
1877	Mean Detected					12.77	SD Detected					1.63	
1878	Mean of Detected Logged Data					2.539	SD of Detected Logged Data					0.133	
1879													
1880	Critical Values for Background Threshold Values (BTVs)												
1881	Tolerance Factor K (For UTL)					1.967	d2max (for USL)					3.118	
1882													
1883	Normal GOF Test on Detects Only												
1884	Shapiro Wilk Test Statistic					0.968	Normal GOF Test on Detected Observations Only						
1885	5% Shapiro Wilk P Value					0.186	Detected Data appear Normal at 5% Significance Level						
1886	Lilliefors Test Statistic					0.143	Lilliefors GOF Test						
1887	5% Lilliefors Critical Value					0.103	Data Not Normal at 5% Significance Level						
1888	Detected Data appear Approximate Normal at 5% Significance Level												
1889													
1890	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
1891	KM Mean					12.63	KM SD					1.751	
1892	95% UTL95% Coverage					16.07	95% KM UPL (t)					15.56	
1893	90% KM Percentile (z)					14.87	95% KM Percentile (z)					15.51	
1894	99% KM Percentile (z)					16.7	95% KM USL					18.09	
1895													
1896	DL/2 Substitution Background Statistics Assuming Normal Distribution												
1897	Mean					12.49	SD					2.135	
1898	95% UTL95% Coverage					16.69	95% UPL (t)					16.07	
1899	90% Percentile (z)					15.22	95% Percentile (z)					16	
1900	99% Percentile (z)					17.45	95% USL					19.14	

	A	B	C	D	E	F	G	H	I	J	K	L	
1901	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
1902													
1903	Gamma GOF Tests on Detected Observations Only												
1904	A-D Test Statistic				0.885	Anderson-Darling GOF Test							
1905	5% A-D Critical Value				0.749	Data Not Gamma Distributed at 5% Significance Level							
1906	K-S Test Statistic				0.158	Kolmogorov-Smirnov GOF							
1907	5% K-S Critical Value				0.103	Data Not Gamma Distributed at 5% Significance Level							
1908	Data Not Gamma Distributed at 5% Significance Level												
1909													
1910	Gamma Statistics on Detected Data Only												
1911	k hat (MLE)				59.24	k star (bias corrected MLE)				56.84			
1912	Theta hat (MLE)				0.216	Theta star (bias corrected MLE)				0.225			
1913	nu hat (MLE)				8767	nu star (bias corrected)				8413			
1914	MLE Mean (bias corrected)				12.77								
1915	MLE Sd (bias corrected)				1.694	95% Percentile of Chisquare (2kstar)				139.6			
1916													
1917	Gamma ROS Statistics using Imputed Non-Detects												
1918	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
1919	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
1920	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
1921	This is especially true when the sample size is small.												
1922	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
1923	Minimum				7.6	Mean				12.66			
1924	Maximum				16.4	Median				12.7			
1925	SD				1.699	CV				0.134			
1926	k hat (MLE)				53.66	k star (bias corrected MLE)				51.58			
1927	Theta hat (MLE)				0.236	Theta star (bias corrected MLE)				0.245			
1928	nu hat (MLE)				8263	nu star (bias corrected)				7943			
1929	MLE Mean (bias corrected)				12.66	MLE Sd (bias corrected)				1.762			
1930	95% Percentile of Chisquare (2kstar)				127.9	90% Percentile				14.96			
1931	95% Percentile				15.69	99% Percentile				17.11			
1932	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
1933	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1934					WH	HW					WH	HW	
1935	95% Approx. Gamma UTL with 95% Coverage				16.3	16.35	95% Approx. Gamma UPL				15.71	15.74	
1936	95% Gamma USL				18.79	18.92							
1937													
1938	Estimates of Gamma Parameters using KM Estimates												
1939	Mean (KM)				12.63	SD (KM)				1.751			
1940	Variance (KM)				3.068	SE of Mean (KM)				0.203			
1941	k hat (KM)				51.97	k star (KM)				49.96			
1942	nu hat (KM)				8004	nu star (KM)				7693			
1943	theta hat (KM)				0.243	theta star (KM)				0.253			
1944	80% gamma percentile (KM)				14.1	90% gamma percentile (KM)				14.96			
1945	95% gamma percentile (KM)				15.7	99% gamma percentile (KM)				17.15			
1946													
1947	The following statistics are computed using gamma distribution and KM estimates												
1948	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
1949					WH	HW					WH	HW	
1950	95% Approx. Gamma UTL with 95% Coverage				16.44	16.49	95% Approx. Gamma UPL				15.81	15.85	

	A	B	C	D	E	F	G	H	I	J	K	L
1951	95% KM Gamma Percentile				15.75	15.79	95% Gamma USL				19.05	19.21
1952												
1953	Lognormal GOF Test on Detected Observations Only											
1954	Shapiro Wilk Approximate Test Statistic				0.945	Shapiro Wilk GOF Test						
1955	5% Shapiro Wilk P Value				0.00576	Data Not Lognormal at 5% Significance Level						
1956	Lilliefors Test Statistic				0.168	Lilliefors GOF Test						
1957	5% Lilliefors Critical Value				0.103	Data Not Lognormal at 5% Significance Level						
1958	Data Not Lognormal at 5% Significance Level											
1959												
1960	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1961	Mean in Original Scale				12.66	Mean in Log Scale				2.529		
1962	SD in Original Scale				1.698	SD in Log Scale				0.14		
1963	95% UTL95% Coverage				16.5	95% BCA UTL95% Coverage				15.9		
1964	95% Bootstrap (%) UTL95% Coverage				15.9	95% UPL (t)				15.85		
1965	90% Percentile (z)				15	95% Percentile (z)				15.78		
1966	99% Percentile (z)				17.35	95% USL				19.38		
1967												
1968	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1969	KM Mean of Logged Data				2.525	95% KM UTL (Lognormal)95% Coverage				16.69		
1970	KM SD of Logged Data				0.147	95% KM UPL (Lognormal)				15.99		
1971	95% KM Percentile Lognormal (z)				15.92	95% KM USL (Lognormal)				19.77		
1972												
1973	Background DL/2 Statistics Assuming Lognormal Distribution											
1974	Mean in Original Scale				12.49	Mean in Log Scale				2.506		
1975	SD in Original Scale				2.135	SD in Log Scale				0.208		
1976	95% UTL95% Coverage				18.47	95% UPL (t)				17.38		
1977	90% Percentile (z)				16.01	95% Percentile (z)				17.27		
1978	99% Percentile (z)				19.91	95% USL				23.48		
1979	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1980												
1981	Nonparametric Distribution Free Background Statistics											
1982	Data appear to follow a Discernible Distribution at 5% Significance Level											
1983												
1984	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1985	Order of Statistic, r				76	95% UTL with95% Coverage				15.9		
1986	Approx, f used to compute achieved CC				2	Approximate Actual Confidence Coefficient achieved by UTL				0.903		
1987	Approximate Sample Size needed to achieve specified CC				93	95% UPL				15.8		
1988	95% USL				16.4	95% KM Chebyshev UPL				20.31		
1989												
1990	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1991	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1992	and consists of observations collected from clean unimpacted locations.											
1993	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1994	represents a background data set and when many onsite observations need to be compared with the BTV.											
1995												
1996	SODIUM, DISSOLVED											
1997												
1998	General Statistics											
1999	Total Number of Observations				99	Number of Distinct Observations				36		
2000						Number of Missing Observations				36		

	A	B	C	D	E	F	G	H	I	J	K	L
2001	Minimum					10.7	First Quartile					12.35
2002	Second Largest					16	Median					13
2003	Maximum					16.4	Third Quartile					13.9
2004	Mean					13.11	SD					1.197
2005	Coefficient of Variation					0.0914	Skewness					0.124
2006	Mean of logged Data					2.569	SD of logged Data					0.0918
2007												
2008	Critical Values for Background Threshold Values (BTVs)											
2009	Tolerance Factor K (For UTL)					1.925	d2max (for USL)					3.206
2010												
2011	Normal GOF Test											
2012	Shapiro Wilk Test Statistic					0.967	Normal GOF Test					
2013	5% Shapiro Wilk P Value					0.0898	Data appear Normal at 5% Significance Level					
2014	Lilliefors Test Statistic					0.0882	Lilliefors GOF Test					
2015	5% Lilliefors Critical Value					0.0893	Data appear Normal at 5% Significance Level					
2016	Data appear Normal at 5% Significance Level											
2017												
2018	Background Statistics Assuming Normal Distribution											
2019	95% UTL with	95% Coverage				15.41	90% Percentile (z)					14.64
2020		95% UPL (t)				15.1	95% Percentile (z)					15.08
2021		95% USL				16.94	99% Percentile (z)					15.89
2022												
2023	Gamma GOF Test											
2024	A-D Test Statistic					0.741	Anderson-Darling Gamma GOF Test					
2025	5% A-D Critical Value					0.75	Detected data appear Gamma Distributed at 5% Significance Level					
2026	K-S Test Statistic					0.0996	Kolmogorov-Smirnov Gamma GOF Test					
2027	5% K-S Critical Value					0.0897	Data Not Gamma Distributed at 5% Significance Level					
2028	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
2029												
2030	Gamma Statistics											
2031	k hat (MLE)					120.6	k star (bias corrected MLE)					117
2032	Theta hat (MLE)					0.109	Theta star (bias corrected MLE)					0.112
2033	nu hat (MLE)					23887	nu star (bias corrected)					23165
2034	MLE Mean (bias corrected)					13.11	MLE Sd (bias corrected)					1.212
2035												
2036	Background Statistics Assuming Gamma Distribution											
2037	95% Wilson Hilferty (WH) Approx. Gamma UPL					15.17	90% Percentile					14.68
2038	95% Hawkins Wixley (HW) Approx. Gamma UPL					15.18	95% Percentile					15.16
2039	95% WH Approx. Gamma UTL with 95% Coverage					15.51	99% Percentile					16.09
2040	95% HW Approx. Gamma UTL with 95% Coverage					15.53						
2041	95% WH USL					17.3	95% HW USL					17.35
2042												
2043	Lognormal GOF Test											
2044	Shapiro Wilk Test Statistic					0.964	Shapiro Wilk Lognormal GOF Test					
2045	5% Shapiro Wilk P Value					0.0481	Data Not Lognormal at 5% Significance Level					
2046	Lilliefors Test Statistic					0.106	Lilliefors Lognormal GOF Test					
2047	5% Lilliefors Critical Value					0.0893	Data Not Lognormal at 5% Significance Level					
2048	Data Not Lognormal at 5% Significance Level											
2049												
2050	Background Statistics assuming Lognormal Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
2051	95% UTL with 95% Coverage					15.57	90% Percentile (z)					14.68
2052	95% UPL (t)					15.21	95% Percentile (z)					15.18
2053	95% USL					17.52	99% Percentile (z)					16.16
2054												
2055	Nonparametric Distribution Free Background Statistics											
2056	Data appear Normal at 5% Significance Level											
2057												
2058	Nonparametric Upper Limits for Background Threshold Values											
2059	Order of Statistic, r					97	95% UTL with 95% Coverage					15.8
2060	Approx, f used to compute achieved CC					1.702	Approximate Actual Confidence Coefficient achieved by UTL					0.878
2061							Approximate Sample Size needed to achieve specified CC					124
2062	95% Percentile Bootstrap UTL with 95% Coverage					15.8	95% BCA Bootstrap UTL with 95% Coverage					15.8
2063	95% UPL					15.2	90% Percentile					14.52
2064	90% Chebyshev UPL					16.72	95% Percentile					15.02
2065	95% Chebyshev UPL					18.35	99% Percentile					16.01
2066	95% USL					16.4						
2067												
2068	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2069	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2070	and consists of observations collected from clean unimpacted locations.											
2071	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2072	represents a background data set and when many onsite observations need to be compared with the BTV.											
2073												
2074	SPEC. COND., FIELD											
2075												
2076	General Statistics											
2077	Total Number of Observations					120	Number of Missing Observations					15
2078	Number of Distinct Observations					71						
2079	Number of Detects					116	Number of Non-Detects					4
2080	Number of Distinct Detects					71	Number of Distinct Non-Detects					4
2081	Minimum Detect					173	Minimum Non-Detect					254
2082	Maximum Detect					358	Maximum Non-Detect					266
2083	Variance Detected					999.8	Percent Non-Detects					3.333%
2084	Mean Detected					275.4	SD Detected					31.62
2085	Mean of Detected Logged Data					5.611	SD of Detected Logged Data					0.121
2086												
2087	Critical Values for Background Threshold Values (BTVs)											
2088	Tolerance Factor K (For UTL)					1.897	d2max (for USL)					3.271
2089												
2090	Normal GOF Test on Detects Only											
2091	Shapiro Wilk Test Statistic					0.971	Normal GOF Test on Detected Observations Only					
2092	5% Shapiro Wilk P Value					0.128	Detected Data appear Normal at 5% Significance Level					
2093	Lilliefors Test Statistic					0.0641	Lilliefors GOF Test					
2094	5% Lilliefors Critical Value					0.0826	Detected Data appear Normal at 5% Significance Level					
2095	Detected Data appear Normal at 5% Significance Level											
2096												
2097	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2098	KM Mean					274.2	KM SD					31.94
2099	95% UTL95% Coverage					334.8	95% KM UPL (t)					327.4
2100	90% KM Percentile (z)					315.1	95% KM Percentile (z)					326.7

	A	B	C	D	E	F	G	H	I	J	K	L	
2101	99% KM Percentile (z)					348.5	95% KM USL					378.7	
2102													
2103	DL/2 Substitution Background Statistics Assuming Normal Distribution												
2104	Mean					270.6	SD					40.62	
2105	95% UTL95% Coverage					347.6	95% UPL (t)					338.2	
2106	90% Percentile (z)					322.7	95% Percentile (z)					337.4	
2107	99% Percentile (z)					365.1	95% USL					403.5	
2108	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
2109													
2110	Gamma GOF Tests on Detected Observations Only												
2111	A-D Test Statistic					1.168	Anderson-Darling GOF Test						
2112	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level						
2113	K-S Test Statistic					0.0751	Kolmogorov-Smirnov GOF						
2114	5% K-S Critical Value					0.0851	Detected data appear Gamma Distributed at 5% Significance Level						
2115	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
2116													
2117	Gamma Statistics on Detected Data Only												
2118	k hat (MLE)					71.54	k star (bias corrected MLE)					69.69	
2119	Theta hat (MLE)					3.85	Theta star (bias corrected MLE)					3.952	
2120	nu hat (MLE)					16597	nu star (bias corrected)					16169	
2121	MLE Mean (bias corrected)					275.4							
2122	MLE Sd (bias corrected)					32.99	95% Percentile of Chisquare (2kstar)					167.9	
2123													
2124	Gamma ROS Statistics using Imputed Non-Detects												
2125	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
2126	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
2127	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
2128	This is especially true when the sample size is small.												
2129	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
2130	Minimum					173	Mean					274.3	
2131	Maximum					358	Median					275.5	
2132	SD					31.67	CV					0.115	
2133	k hat (MLE)					71.24	k star (bias corrected MLE)					69.47	
2134	Theta hat (MLE)					3.851	Theta star (bias corrected MLE)					3.949	
2135	nu hat (MLE)					17098	nu star (bias corrected)					16672	
2136	MLE Mean (bias corrected)					274.3	MLE Sd (bias corrected)					32.91	
2137	95% Percentile of Chisquare (2kstar)					167.4	90% Percentile					317.3	
2138	95% Percentile					330.6	99% Percentile					356.6	
2139	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
2140	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
2141						WH	HW					WH	HW
2142	95% Approx. Gamma UTL with 95% Coverage					339.5	340.3	95% Approx. Gamma UPL				330.9	331.4
2143	95% Gamma USL					393.9	396.4						
2144													
2145	Estimates of Gamma Parameters using KM Estimates												
2146	Mean (KM)					274.2	SD (KM)					31.94	
2147	Variance (KM)					1020	SE of Mean (KM)					2.956	
2148	k hat (KM)					73.71	k star (KM)					71.87	
2149	nu hat (KM)					17690	nu star (KM)					17249	
2150	theta hat (KM)					3.72	theta star (KM)					3.815	

	A	B	C	D	E	F	G	H	I	J	K	L
2151			80% gamma percentile (KM)	301						90% gamma percentile (KM)		316.4
2152			95% gamma percentile (KM)	329.5						99% gamma percentile (KM)		355
2153												
2154			The following statistics are computed using gamma distribution and KM estimates									
2155			Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods									
2156				WH	HW					WH	HW	
2157			95% Approx. Gamma UTL with 95% Coverage	340.2	341					95% Approx. Gamma UPL	331.4	332.1
2158			95% KM Gamma Percentile	330.7	331.3					95% Gamma USL	395.3	398
2159												
2160			Lognormal GOF Test on Detected Observations Only									
2161			Shapiro Wilk Approximate Test Statistic		0.936					Shapiro Wilk GOF Test		
2162			5% Shapiro Wilk P Value		1.4338E-5					Data Not Lognormal at 5% Significance Level		
2163			Lilliefors Test Statistic		0.083					Lilliefors GOF Test		
2164			5% Lilliefors Critical Value		0.0826					Data Not Lognormal at 5% Significance Level		
2165			Data Not Lognormal at 5% Significance Level									
2166												
2167			Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects									
2168			Mean in Original Scale		274.3					Mean in Log Scale		5.607
2169			SD in Original Scale		31.71					SD in Log Scale		0.122
2170			95% UTL95% Coverage		343					95% BCA UTL95% Coverage		326.2
2171			95% Bootstrap (%) UTL95% Coverage		329.2					95% UPL (t)		333.4
2172			90% Percentile (z)		318.3					95% Percentile (z)		332.6
2173			99% Percentile (z)		361.3					95% USL		405.3
2174												
2175			Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution									
2176			KM Mean of Logged Data		5.607					95% KM UTL (Lognormal)95% Coverage		343.8
2177			KM SD of Logged Data		0.123					95% KM UPL (Lognormal)		334.1
2178			95% KM Percentile Lognormal (z)		333.3					95% KM USL (Lognormal)		407.1
2179												
2180			Background DL/2 Statistics Assuming Lognormal Distribution									
2181			Mean in Original Scale		270.6					Mean in Log Scale		5.587
2182			SD in Original Scale		40.62					SD in Log Scale		0.179
2183			95% UTL95% Coverage		374.8					95% UPL (t)		359.5
2184			90% Percentile (z)		335.7					95% Percentile (z)		358.3
2185			99% Percentile (z)		404.8					95% USL		479.4
2186			DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.									
2187												
2188			Nonparametric Distribution Free Background Statistics									
2189			Data appear to follow a Discernible Distribution at 5% Significance Level									
2190												
2191			Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)									
2192			Order of Statistic, r		117					95% UTL with95% Coverage		329
2193			Approx, f used to compute achieved CC		1.539					Approximate Actual Confidence Coefficient achieved by UTL		0.856
2194			Approximate Sample Size needed to achieve specified CC		153					95% UPL		326
2195			95% USL		358					95% KM Chebyshev UPL		414
2196												
2197			Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.									
2198			Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers									
2199			and consists of observations collected from clean unimpacted locations.									
2200			The use of USL tends to provide a balance between false positives and false negatives provided the data									

	A	B	C	D	E	F	G	H	I	J	K	L	
2201	represents a background data set and when many onsite observations need to be compared with the BTV.												
2202													
2203	SPEC. COND., LAB												
2204													
2205	General Statistics												
2206	Total Number of Observations				129	Number of Missing Observations				6			
2207	Number of Distinct Observations				48								
2208	Number of Detects				126	Number of Non-Detects				3			
2209	Number of Distinct Detects				48	Number of Distinct Non-Detects				2			
2210	Minimum Detect				218	Minimum Non-Detect				260			
2211	Maximum Detect				310	Maximum Non-Detect				270			
2212	Variance Detected				298.7	Percent Non-Detects				2.326%			
2213	Mean Detected				271.5	SD Detected				17.28			
2214	Mean of Detected Logged Data				5.602	SD of Detected Logged Data				0.0649			
2215													
2216	Critical Values for Background Threshold Values (BTVs)												
2217	Tolerance Factor K (For UTL)				1.887	d2max (for USL)				3.294			
2218													
2219	Normal GOF Test on Detects Only												
2220	Shapiro Wilk Test Statistic				0.968	Normal GOF Test on Detected Observations Only							
2221	5% Shapiro Wilk P Value				0.0505	Detected Data appear Normal at 5% Significance Level							
2222	Lilliefors Test Statistic				0.0867	Lilliefors GOF Test							
2223	5% Lilliefors Critical Value				0.0793	Data Not Normal at 5% Significance Level							
2224	Detected Data appear Approximate Normal at 5% Significance Level												
2225													
2226	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
2227	KM Mean		271			KM SD		17.39					
2228	95% UTL95% Coverage		303.8			95% KM UPL (t)		299.9					
2229	90% KM Percentile (z)		293.3			95% KM Percentile (z)		299.6					
2230	99% KM Percentile (z)		311.5			95% KM USL		328.3					
2231													
2232	DL/2 Substitution Background Statistics Assuming Normal Distribution												
2233	Mean		268.3			SD		26.99					
2234	95% UTL95% Coverage		319.2			95% UPL (t)		313.2					
2235	90% Percentile (z)		302.9			95% Percentile (z)		312.7					
2236	99% Percentile (z)		331.1			95% USL		357.2					
2237	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
2238													
2239	Gamma GOF Tests on Detected Observations Only												
2240	A-D Test Statistic		1.212			Anderson-Darling GOF Test							
2241	5% A-D Critical Value		0.75			Data Not Gamma Distributed at 5% Significance Level							
2242	K-S Test Statistic		0.0923			Kolmogorov-Smirnov GOF							
2243	5% K-S Critical Value		0.0825			Data Not Gamma Distributed at 5% Significance Level							
2244	Data Not Gamma Distributed at 5% Significance Level												
2245													
2246	Gamma Statistics on Detected Data Only												
2247	k hat (MLE)		242.6			k star (bias corrected MLE)		236.9					
2248	Theta hat (MLE)		1.119			Theta star (bias corrected MLE)		1.146					
2249	nu hat (MLE)		61142			nu star (bias corrected)		59688					
2250	MLE Mean (bias corrected)		271.5										

	A	B	C	D	E	F	G	H	I	J	K	L
2251	MLE Sd (bias corrected)					17.64	95% Percentile of Chisquare (2kstar)					525.5
2252												
2253	Gamma ROS Statistics using Imputed Non-Detects											
2254	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2255	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
2256	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
2257	This is especially true when the sample size is small.											
2258	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2259	Minimum					218	Mean					271.1
2260	Maximum					310	Median					270
2261	SD					17.31	CV					0.0639
2262	k hat (MLE)					241.5	k star (bias corrected MLE)					235.9
2263	Theta hat (MLE)					1.122	Theta star (bias corrected MLE)					1.149
2264	nu hat (MLE)					62315	nu star (bias corrected)					60867
2265	MLE Mean (bias corrected)					271.1	MLE Sd (bias corrected)					17.65
2266	95% Percentile of Chisquare (2kstar)					523.5	90% Percentile					293.9
2267	95% Percentile					300.7	99% Percentile					313.8
2268	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
2269	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2270					WH	HW					WH	HW
2271	95% Approx. Gamma UTL with 95% Coverage				305.1	305.2	95% Approx. Gamma UPL				300.8	301
2272	95% Gamma USL				332.5	333.1						
2273												
2274	Estimates of Gamma Parameters using KM Estimates											
2275	Mean (KM)					271	SD (KM)					17.39
2276	Variance (KM)					302.4	SE of Mean (KM)					1.547
2277	k hat (KM)					242.9	k star (KM)					237.2
2278	nu hat (KM)					62660	nu star (KM)					61204
2279	theta hat (KM)					1.116	theta star (KM)					1.142
2280	80% gamma percentile (KM)					285.7	90% gamma percentile (KM)					293.8
2281	95% gamma percentile (KM)					300.6	99% gamma percentile (KM)					313.6
2282												
2283	The following statistics are computed using gamma distribution and KM estimates											
2284	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2285					WH	HW					WH	HW
2286	95% Approx. Gamma UTL with 95% Coverage				305.2	305.4	95% Approx. Gamma UPL				301	301.1
2287	95% KM Gamma Percentile				300.6	300.8	95% Gamma USL				332.8	333.5
2288												
2289	Lognormal GOF Test on Detected Observations Only											
2290	Shapiro Wilk Approximate Test Statistic					0.956	Shapiro Wilk GOF Test					
2291	5% Shapiro Wilk P Value					0.00267	Data Not Lognormal at 5% Significance Level					
2292	Lilliefors Test Statistic					0.0966	Lilliefors GOF Test					
2293	5% Lilliefors Critical Value					0.0793	Data Not Lognormal at 5% Significance Level					
2294	Data Not Lognormal at 5% Significance Level											
2295												
2296	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2297	Mean in Original Scale					271.1	Mean in Log Scale					5.6
2298	SD in Original Scale					17.32	SD in Log Scale					0.0651
2299	95% UTL95% Coverage					305.8	95% BCA UTL95% Coverage					304.2
2300	95% Bootstrap (%) UTL95% Coverage					305.4	95% UPL (t)					301.4

	A	B	C	D	E	F	G	H	I	J	K	L
2301	90% Percentile (z)					294	95% Percentile (z)					301
2302	99% Percentile (z)					314.7	95% USL					335.1
2303												
2304	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2305	KM Mean of Logged Data					5.6	95% KM UTL (Lognormal)95% Coverage					306
2306	KM SD of Logged Data					0.0654	95% KM UPL (Lognormal)					301.5
2307	95% KM Percentile Lognormal (z)					301.2	95% KM USL (Lognormal)					335.5
2308												
2309	Background DL/2 Statistics Assuming Lognormal Distribution											
2310	Mean in Original Scale					268.3	Mean in Log Scale					5.585
2311	SD in Original Scale					26.99	SD in Log Scale					0.125
2312	95% UTL95% Coverage					337.4	95% UPL (t)					328.1
2313	90% Percentile (z)					312.8	95% Percentile (z)					327.3
2314	99% Percentile (z)					356.5	95% USL					402.3
2315	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2316												
2317	Nonparametric Distribution Free Background Statistics											
2318	Data appear to follow a Discernible Distribution at 5% Significance Level											
2319												
2320	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2321	Order of Statistic, r					126	95% UTL with95% Coverage					307
2322	Approx, f used to compute achieved CC					1.658	Approximate Actual Confidence Coefficient achieved by UTL					0.891
2323	Approximate Sample Size needed to achieve specified CC					153	95% UPL					298.5
2324	95% USL					310	95% KM Chebyshev UPL					347.1
2325												
2326	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2327	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2328	and consists of observations collected from clean unimpacted locations.											
2329	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2330	represents a background data set and when many onsite observations need to be compared with the BTV.											
2331												
2332	SULFATE											
2333												
2334	General Statistics											
2335	Total Number of Observations					94	Number of Missing Observations					41
2336	Number of Distinct Observations					18						
2337	Number of Detects					34	Number of Non-Detects					60
2338	Number of Distinct Detects					17	Number of Distinct Non-Detects					2
2339	Minimum Detect					1.1	Minimum Non-Detect					2
2340	Maximum Detect					4.4	Maximum Non-Detect					5
2341	Variance Detected					0.499	Percent Non-Detects					63.83%
2342	Mean Detected					1.971	SD Detected					0.706
2343	Mean of Detected Logged Data					0.626	SD of Detected Logged Data					0.318
2344												
2345	Critical Values for Background Threshold Values (BTVs)											
2346	Tolerance Factor K (For UTL)					1.933	d2max (for USL)					3.188
2347												
2348	Normal GOF Test on Detects Only											
2349	Shapiro Wilk Test Statistic					0.831	Shapiro Wilk GOF Test					
2350	5% Shapiro Wilk Critical Value					0.933	Data Not Normal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L	
2351	Lilliefors Test Statistic					0.173	Lilliefors GOF Test						
2352	5% Lilliefors Critical Value					0.15	Data Not Normal at 5% Significance Level						
2353	Data Not Normal at 5% Significance Level												
2354													
2355	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
2356	KM Mean					1.859	KM SD					0.662	
2357	95% UTL95% Coverage					3.138	95% KM UPL (t)					2.964	
2358	90% KM Percentile (z)					2.707	95% KM Percentile (z)					2.948	
2359	99% KM Percentile (z)					3.399	95% KM USL					3.969	
2360													
2361	DL/2 Substitution Background Statistics Assuming Normal Distribution												
2362	Mean					2.165	SD					0.619	
2363	95% UTL95% Coverage					3.362	95% UPL (t)					3.199	
2364	90% Percentile (z)					2.959	95% Percentile (z)					3.184	
2365	99% Percentile (z)					3.606	95% USL					4.14	
2366	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
2367													
2368	Gamma GOF Tests on Detected Observations Only												
2369	A-D Test Statistic					0.933	Anderson-Darling GOF Test						
2370	5% A-D Critical Value					0.748	Data Not Gamma Distributed at 5% Significance Level						
2371	K-S Test Statistic					0.139	Kolmogorov-Smirnov GOF						
2372	5% K-S Critical Value					0.151	Detected data appear Gamma Distributed at 5% Significance Level						
2373	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
2374													
2375	Gamma Statistics on Detected Data Only												
2376	k hat (MLE)					9.742	k star (bias corrected MLE)					8.902	
2377	Theta hat (MLE)					0.202	Theta star (bias corrected MLE)					0.221	
2378	nu hat (MLE)					662.5	nu star (bias corrected)					605.4	
2379	MLE Mean (bias corrected)					1.971							
2380	MLE Sd (bias corrected)					0.66	95% Percentile of Chisquare (2kstar)					28.62	
2381													
2382	Gamma ROS Statistics using Imputed Non-Detects												
2383	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
2384	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
2385	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
2386	This is especially true when the sample size is small.												
2387	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
2388	Minimum					0.693	Mean					1.852	
2389	Maximum					4.4	Median					1.77	
2390	SD					0.655	CV					0.354	
2391	k hat (MLE)					8.729	k star (bias corrected MLE)					8.457	
2392	Theta hat (MLE)					0.212	Theta star (bias corrected MLE)					0.219	
2393	nu hat (MLE)					1641	nu star (bias corrected)					1590	
2394	MLE Mean (bias corrected)					1.852	MLE Sd (bias corrected)					0.637	
2395	95% Percentile of Chisquare (2kstar)					27.48	90% Percentile					2.7	
2396	95% Percentile					3.008	99% Percentile					3.644	
2397	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
2398	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
2399					WH	HW					WH	HW	
2400	95% Approx. Gamma UTL with 95% Coverage				3.25	3.28	95% Approx. Gamma UPL				3.015	3.032	

	A	B	C	D	E	F	G	H	I	J	K	L
2401	95% Gamma USL				4.542	4.674						
2402												
2403	Estimates of Gamma Parameters using KM Estimates											
2404	Mean (KM)				1.859	SD (KM)				0.662		
2405	Variance (KM)				0.438	SE of Mean (KM)				0.104		
2406	k hat (KM)				7.891	k star (KM)				7.647		
2407	nu hat (KM)				1484	nu star (KM)				1438		
2408	theta hat (KM)				0.236	theta star (KM)				0.243		
2409	80% gamma percentile (KM)				2.389	90% gamma percentile (KM)				2.756		
2410	95% gamma percentile (KM)				3.085	99% gamma percentile (KM)				3.768		
2411												
2412	The following statistics are computed using gamma distribution and KM estimates											
2413	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2414					WH	HW				WH	HW	
2415	95% Approx. Gamma UTL with 95% Coverage				3.15	3.158	95% Approx. Gamma UPL			2.936	2.936	
2416	95% KM Gamma Percentile				2.916	2.916	95% Gamma USL			4.32	4.394	
2417												
2418	Lognormal GOF Test on Detected Observations Only											
2419	Shapiro Wilk Test Statistic				0.931	Shapiro Wilk GOF Test						
2420	5% Shapiro Wilk Critical Value				0.933	Data Not Lognormal at 5% Significance Level						
2421	Lilliefors Test Statistic				0.142	Lilliefors GOF Test						
2422	5% Lilliefors Critical Value				0.15	Detected Data appear Lognormal at 5% Significance Level						
2423	Detected Data appear Approximate Lognormal at 5% Significance Level											
2424												
2425	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2426	Mean in Original Scale				1.855	Mean in Log Scale				0.57		
2427	SD in Original Scale				0.614	SD in Log Scale				0.306		
2428	95% UTL95% Coverage				3.198	95% BCA UTL95% Coverage				3.455		
2429	95% Bootstrap (%) UTL95% Coverage				3.455	95% UPL (t)				2.95		
2430	90% Percentile (z)				2.619	95% Percentile (z)				2.927		
2431	99% Percentile (z)				3.607	95% USL				4.698		
2432												
2433	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2434	KM Mean of Logged Data				0.569	95% KM UTL (Lognormal)95% Coverage				3.192		
2435	KM SD of Logged Data				0.306	95% KM UPL (Lognormal)				2.945		
2436	95% KM Percentile Lognormal (z)				2.923	95% KM USL (Lognormal)				4.687		
2437												
2438	Background DL/2 Statistics Assuming Lognormal Distribution											
2439	Mean in Original Scale				2.165	Mean in Log Scale				0.724		
2440	SD in Original Scale				0.619	SD in Log Scale				0.332		
2441	95% UTL95% Coverage				3.919	95% UPL (t)				3.591		
2442	90% Percentile (z)				3.156	95% Percentile (z)				3.561		
2443	99% Percentile (z)				4.466	95% USL				5.947		
2444	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2445												
2446	Nonparametric Distribution Free Background Statistics											
2447	Data appear to follow a Discernible Distribution at 5% Significance Level											
2448												
2449	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2450	Order of Statistic, r				92	95% UTL with95% Coverage				5		

	A	B	C	D	E	F	G	H	I	J	K	L
2451	Approx, f used to compute achieved CC					1.614	Approximate Actual Confidence Coefficient achieved by UTL					0.855
2452	Approximate Sample Size needed to achieve specified CC					124	95% UPL					5
2453	95% USL					5	95% KM Chebyshev UPL					4.759
2454												
2455	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2456	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2457	and consists of observations collected from clean unimpacted locations.											
2458	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2459	represents a background data set and when many onsite observations need to be compared with the BTV.											
2460												
2461	ALKALINITY											
2462												
2463	General Statistics											
2464	Total Number of Observations					73	Number of Missing Observations					62
2465	Number of Distinct Observations					5						
2466	Number of Detects					49	Number of Non-Detects					24
2467	Number of Distinct Detects					5	Number of Distinct Non-Detects					1
2468	Minimum Detect					5	Minimum Non-Detect					5
2469	Maximum Detect					8	Maximum Non-Detect					5
2470	Variance Detected					0.634	Percent Non-Detects					32.88%
2471	Mean Detected					5.924	SD Detected					0.796
2472	Mean of Detected Logged Data					1.77	SD of Detected Logged Data					0.133
2473												
2474	Critical Values for Background Threshold Values (BTVs)											
2475	Tolerance Factor K (For UTL)					1.977	d2max (for USL)					3.099
2476												
2477	Normal GOF Test on Detects Only											
2478	Shapiro Wilk Test Statistic					0.834	Shapiro Wilk GOF Test					
2479	5% Shapiro Wilk Critical Value					0.947	Data Not Normal at 5% Significance Level					
2480	Lilliefors Test Statistic					0.238	Lilliefors GOF Test					
2481	5% Lilliefors Critical Value					0.126	Data Not Normal at 5% Significance Level					
2482	Data Not Normal at 5% Significance Level											
2483												
2484	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2485	KM Mean					5.621	KM SD					0.778
2486	95% UTL95% Coverage					7.159	95% KM UPL (t)					6.926
2487	90% KM Percentile (z)					6.618	95% KM Percentile (z)					6.9
2488	99% KM Percentile (z)					7.43	95% KM USL					8.032
2489												
2490	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2491	Mean					4.799	SD					1.745
2492	95% UTL95% Coverage					8.25	95% UPL (t)					7.727
2493	90% Percentile (z)					7.035	95% Percentile (z)					7.669
2494	99% Percentile (z)					8.859	95% USL					10.21
2495	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2496												
2497	Gamma GOF Tests on Detected Observations Only											
2498	A-D Test Statistic					3.496	Anderson-Darling GOF Test					
2499	5% A-D Critical Value					0.748	Data Not Gamma Distributed at 5% Significance Level					
2500	K-S Test Statistic					0.229	Kolmogorov-Smirnov GOF					

	A	B	C	D	E	F	G	H	I	J	K	L		
2501	5% K-S Critical Value					0.126	Data Not Gamma Distributed at 5% Significance Level							
2502	Data Not Gamma Distributed at 5% Significance Level													
2503														
2504	Gamma Statistics on Detected Data Only													
2505	k hat (MLE)					57.76	k star (bias corrected MLE)					54.23		
2506	Theta hat (MLE)					0.103	Theta star (bias corrected MLE)					0.109		
2507	nu hat (MLE)					5660	nu star (bias corrected)					5315		
2508	MLE Mean (bias corrected)					5.924								
2509	MLE Sd (bias corrected)					0.804	95% Percentile of Chisquare (2kstar)					133.8		
2510														
2511	Gamma ROS Statistics using Imputed Non-Detects													
2512	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs													
2513	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)													
2514	For such situations, GROS method may yield incorrect values of UCLs and BTVs													
2515	This is especially true when the sample size is small.													
2516	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
2517	Minimum					3.169	Mean					5.369		
2518	Maximum					8	Median					5		
2519	SD					1.061	CV					0.198		
2520	k hat (MLE)					25.58	k star (bias corrected MLE)					24.54		
2521	Theta hat (MLE)					0.21	Theta star (bias corrected MLE)					0.219		
2522	nu hat (MLE)					3735	nu star (bias corrected)					3582		
2523	MLE Mean (bias corrected)					5.369	MLE Sd (bias corrected)					1.084		
2524	95% Percentile of Chisquare (2kstar)					66.42	90% Percentile					6.797		
2525	95% Percentile					7.267	99% Percentile					8.207		
2526	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
2527	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
2528						WH	HW						WH	HW
2529	95% Approx. Gamma UTL with 95% Coverage					7.684	7.719	95% Approx. Gamma UPL					7.284	7.306
2530	95% Gamma USL					9.31	9.422							
2531														
2532	Estimates of Gamma Parameters using KM Estimates													
2533	Mean (KM)					5.621	SD (KM)					0.778		
2534	Variance (KM)					0.605	SE of Mean (KM)					0.092		
2535	k hat (KM)					52.2	k star (KM)					50.06		
2536	nu hat (KM)					7621	nu star (KM)					7309		
2537	theta hat (KM)					0.108	theta star (KM)					0.112		
2538	80% gamma percentile (KM)					6.276	90% gamma percentile (KM)					6.66		
2539	95% gamma percentile (KM)					6.988	99% gamma percentile (KM)					7.632		
2540														
2541	The following statistics are computed using gamma distribution and KM estimates													
2542	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
2543						WH	HW						WH	HW
2544	95% Approx. Gamma UTL with 95% Coverage					7.199	7.205	95% Approx. Gamma UPL					6.937	6.939
2545	95% KM Gamma Percentile					6.909	6.91	95% Gamma USL					8.238	8.27
2546														
2547	Lognormal GOF Test on Detected Observations Only													
2548	Shapiro Wilk Test Statistic					0.831	Shapiro Wilk GOF Test							
2549	5% Shapiro Wilk Critical Value					0.947	Data Not Lognormal at 5% Significance Level							
2550	Lilliefors Test Statistic					0.237	Lilliefors GOF Test							

	A	B	C	D	E	F	G	H	I	J	K	L	
2551	5% Lilliefors Critical Value					0.126	Data Not Lognormal at 5% Significance Level						
2552	Data Not Lognormal at 5% Significance Level												
2553													
2554	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects												
2555	Mean in Original Scale					5.407	Mean in Log Scale					1.671	
2556	SD in Original Scale					1.011	SD in Log Scale					0.187	
2557	95% UTL95% Coverage					7.691	95% BCA UTL95% Coverage					6	
2558	95% Bootstrap (%) UTL95% Coverage					7.3	95% UPL (t)					7.273	
2559	90% Percentile (z)					6.754	95% Percentile (z)					7.228	
2560	99% Percentile (z)					8.21	95% USL					9.485	
2561													
2562	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
2563	KM Mean of Logged Data					1.717	95% KM UTL (Lognormal)95% Coverage					7.224	
2564	KM SD of Logged Data					0.131	95% KM UPL (Lognormal)					6.945	
2565	95% KM Percentile Lognormal (z)					6.915	95% KM USL (Lognormal)					8.373	
2566													
2567	Background DL/2 Statistics Assuming Lognormal Distribution												
2568	Mean in Original Scale					4.799	Mean in Log Scale					1.49	
2569	SD in Original Scale					1.745	SD in Log Scale					0.418	
2570	95% UTL95% Coverage					10.14	95% UPL (t)					8.947	
2571	90% Percentile (z)					7.581	95% Percentile (z)					8.825	
2572	99% Percentile (z)					11.74	95% USL					16.21	
2573	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.												
2574													
2575	Nonparametric Distribution Free Background Statistics												
2576	Data do not follow a Discernible Distribution (0.05)												
2577													
2578	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)												
2579	Order of Statistic, r					72	95% UTL with95% Coverage					7.3	
2580	Approx, f used to compute achieved CC					1.895	Approximate Actual Confidence Coefficient achieved by UTL					0.885	
2581	Approximate Sample Size needed to achieve specified CC					93	95% UPL					7	
2582	95% USL					8	95% KM Chebyshev UPL					9.035	
2583													
2584	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
2585	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
2586	and consists of observations collected from clean unimpacted locations.												
2587	The use of USL tends to provide a balance between false positives and false negatives provided the data												
2588	represents a background data set and when many onsite observations need to be compared with the BTV.												
2589													
2590	TDS (TOTAL DISSOLVED SOLIDS)												
2591													
2592	General Statistics												
2593	Total Number of Observations					106	Number of Distinct Observations					66	
2594							Number of Missing Observations					29	
2595	Minimum					110	First Quartile					180	
2596	Second Largest					286	Median					200	
2597	Maximum					294	Third Quartile					227.5	
2598	Mean					202	SD					35.17	
2599	Coefficient of Variation					0.174	Skewness					0.173	
2600	Mean of logged Data					5.293	SD of logged Data					0.179	

	A	B	C	D	E	F	G	H	I	J	K	L	
2601													
2602	Critical Values for Background Threshold Values (BTVs)												
2603	Tolerance Factor K (For UTL)					1.915		d2max (for USL)				3.229	
2604													
2605	Normal GOF Test												
2606	Shapiro Wilk Test Statistic					0.986		Normal GOF Test					
2607	5% Shapiro Wilk P Value					0.801		Data appear Normal at 5% Significance Level					
2608	Lilliefors Test Statistic					0.0797		Lilliefors GOF Test					
2609	5% Lilliefors Critical Value					0.0863		Data appear Normal at 5% Significance Level					
2610	Data appear Normal at 5% Significance Level												
2611													
2612	Background Statistics Assuming Normal Distribution												
2613	95% UTL with		95% Coverage		269.3		90% Percentile (z)				247.1		
2614			95% UPL (t)		260.6		95% Percentile (z)				259.8		
2615			95% USL		315.6		99% Percentile (z)				283.8		
2616													
2617	Gamma GOF Test												
2618	A-D Test Statistic					0.272		Anderson-Darling Gamma GOF Test					
2619	5% A-D Critical Value					0.75		Detected data appear Gamma Distributed at 5% Significance Level					
2620	K-S Test Statistic					0.059		Kolmogorov-Smirnov Gamma GOF Test					
2621	5% K-S Critical Value					0.0877		Detected data appear Gamma Distributed at 5% Significance Level					
2622	Detected data appear Gamma Distributed at 5% Significance Level												
2623													
2624	Gamma Statistics												
2625	k hat (MLE)					32.54		k star (bias corrected MLE)				31.63	
2626	Theta hat (MLE)					6.207		Theta star (bias corrected MLE)				6.387	
2627	nu hat (MLE)					6899		nu star (bias corrected)				6705	
2628	MLE Mean (bias corrected)					202		MLE Sd (bias corrected)				35.92	
2629													
2630	Background Statistics Assuming Gamma Distribution												
2631	95% Wilson Hilferty (WH) Approx. Gamma UPL					264.8		90% Percentile				249.2	
2632	95% Hawkins Wixley (HW) Approx. Gamma UPL					265.5		95% Percentile				264.5	
2633	95% WH Approx. Gamma UTL with		95% Coverage		275.5		99% Percentile				294.8		
2634	95% HW Approx. Gamma UTL with		95% Coverage		276.5								
2635			95% WH USL		337.1		95% HW USL				340.8		
2636													
2637	Lognormal GOF Test												
2638	Shapiro Wilk Test Statistic					0.982		Shapiro Wilk Lognormal GOF Test					
2639	5% Shapiro Wilk P Value					0.603		Data appear Lognormal at 5% Significance Level					
2640	Lilliefors Test Statistic					0.0631		Lilliefors Lognormal GOF Test					
2641	5% Lilliefors Critical Value					0.0863		Data appear Lognormal at 5% Significance Level					
2642	Data appear Lognormal at 5% Significance Level												
2643													
2644	Background Statistics assuming Lognormal Distribution												
2645	95% UTL with		95% Coverage		280		90% Percentile (z)				250.1		
2646			95% UPL (t)		267.9		95% Percentile (z)				266.8		
2647			95% USL		354.1		99% Percentile (z)				301.4		
2648													
2649	Nonparametric Distribution Free Background Statistics												
2650	Data appear Normal at 5% Significance Level												

	A	B	C	D	E	F	G	H	I	J	K	L	
2651													
2652	Nonparametric Upper Limits for Background Threshold Values												
2653	Order of Statistic, r					104	95% UTL with 95% Coverage					276	
2654	Approx, f used to compute achieved CC					1.825	Approximate Actual Confidence Coefficient achieved by UTL					0.904	
2655							Approximate Sample Size needed to achieve specified CC					124	
2656	95% Percentile Bootstrap UTL with 95% Coverage					275	95% BCA Bootstrap UTL with 95% Coverage					275	
2657	95% UPL					266.9	90% Percentile					247.5	
2658	90% Chebyshev UPL					308	95% Percentile					260.8	
2659	95% Chebyshev UPL					356	99% Percentile					285.5	
2660	95% USL					294							
2661													
2662	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
2663	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
2664	and consists of observations collected from clean unimpacted locations.												
2665	The use of USL tends to provide a balance between false positives and false negatives provided the data												
2666	represents a background data set and when many onsite observations need to be compared with the BTV.												
2667													
2668	TOC (TOTAL ORGANIC CARBON)												
2669													
2670	General Statistics												
2671	Total Number of Observations					130	Number of Missing Observations					5	
2672	Number of Distinct Observations					18							
2673	Number of Detects					32	Number of Non-Detects					98	
2674	Number of Distinct Detects					18	Number of Distinct Non-Detects					3	
2675	Minimum Detect					0.5	Minimum Non-Detect					0.5	
2676	Maximum Detect					1.6	Maximum Non-Detect					1.5	
2677	Variance Detected					0.0993	Percent Non-Detects					75.38%	
2678	Mean Detected					0.988	SD Detected					0.315	
2679	Mean of Detected Logged Data					-0.0655	SD of Detected Logged Data					0.342	
2680													
2681	Critical Values for Background Threshold Values (BTVs)												
2682	Tolerance Factor K (For UTL)					1.886	d2max (for USL)					3.297	
2683													
2684	Normal GOF Test on Detects Only												
2685	Shapiro Wilk Test Statistic					0.942	Shapiro Wilk GOF Test						
2686	5% Shapiro Wilk Critical Value					0.93	Detected Data appear Normal at 5% Significance Level						
2687	Lilliefors Test Statistic					0.11	Lilliefors GOF Test						
2688	5% Lilliefors Critical Value					0.154	Detected Data appear Normal at 5% Significance Level						
2689	Detected Data appear Normal at 5% Significance Level												
2690													
2691	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
2692	KM Mean					0.688	KM SD					0.255	
2693	95% UTL95% Coverage					1.168	95% KM UPL (t)					1.112	
2694	90% KM Percentile (z)					1.014	95% KM Percentile (z)					1.107	
2695	99% KM Percentile (z)					1.281	95% KM USL					1.528	
2696													
2697	DL/2 Substitution Background Statistics Assuming Normal Distribution												
2698	Mean					0.607	SD					0.277	
2699	95% UTL95% Coverage					1.13	95% UPL (t)					1.068	
2700	90% Percentile (z)					0.962	95% Percentile (z)					1.063	

	A	B	C	D	E	F	G	H	I	J	K	L	
2701	99% Percentile (z)					1.252						95% USL	1.521
2702	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
2703													
2704	Gamma GOF Tests on Detected Observations Only												
2705	A-D Test Statistic					0.774	Anderson-Darling GOF Test						
2706	5% A-D Critical Value					0.747	Data Not Gamma Distributed at 5% Significance Level						
2707	K-S Test Statistic					0.151	Kolmogorov-Smirnov GOF						
2708	5% K-S Critical Value					0.155	Detected data appear Gamma Distributed at 5% Significance Level						
2709	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
2710													
2711	Gamma Statistics on Detected Data Only												
2712	k hat (MLE)					9.447	k star (bias corrected MLE)					8.582	
2713	Theta hat (MLE)					0.105	Theta star (bias corrected MLE)					0.115	
2714	nu hat (MLE)					604.6	nu star (bias corrected)					549.2	
2715	MLE Mean (bias corrected)					0.988							
2716	MLE Sd (bias corrected)					0.337	95% Percentile of Chisquare (2kstar)					27.8	
2717													
2718	Gamma ROS Statistics using Imputed Non-Detects												
2719	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
2720	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
2721	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
2722	This is especially true when the sample size is small.												
2723	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
2724	Minimum					0.01	Mean					0.616	
2725	Maximum					1.6	Median					0.586	
2726	SD					0.335	CV					0.544	
2727	k hat (MLE)					2.664	k star (bias corrected MLE)					2.608	
2728	Theta hat (MLE)					0.231	Theta star (bias corrected MLE)					0.236	
2729	nu hat (MLE)					692.8	nu star (bias corrected)					678.1	
2730	MLE Mean (bias corrected)					0.616	MLE Sd (bias corrected)					0.382	
2731	95% Percentile of Chisquare (2kstar)					11.4	90% Percentile					1.128	
2732	95% Percentile					1.347	99% Percentile					1.827	
2733	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
2734	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
2735				WH	HW						WH	HW	
2736	95% Approx. Gamma UTL with 95% Coverage			1.49	1.57	95% Approx. Gamma UPL					1.345	1.402	
2737	95% Gamma USL			2.654	3								
2738													
2739	Estimates of Gamma Parameters using KM Estimates												
2740	Mean (KM)					0.688	SD (KM)					0.255	
2741	Variance (KM)					0.065	SE of Mean (KM)					0.0306	
2742	k hat (KM)					7.28	k star (KM)					7.117	
2743	nu hat (KM)					1893	nu star (KM)					1850	
2744	theta hat (KM)					0.0945	theta star (KM)					0.0966	
2745	80% gamma percentile (KM)					0.89	90% gamma percentile (KM)					1.032	
2746	95% gamma percentile (KM)					1.159	99% gamma percentile (KM)					1.424	
2747													
2748	The following statistics are computed using gamma distribution and KM estimates												
2749	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
2750				WH	HW						WH	HW	

	A	B	C	D	E	F	G	H	I	J	K	L
2751	95% Approx. Gamma UTL with 95% Coverage				1.169	1.17	95% Approx. Gamma UPL				1.099	1.098
2752	95% KM Gamma Percentile				1.094	1.092	95% Gamma USL				1.683	1.714
2753												
2754	Lognormal GOF Test on Detected Observations Only											
2755	Shapiro Wilk Test Statistic				0.923	Shapiro Wilk GOF Test						
2756	5% Shapiro Wilk Critical Value				0.93	Data Not Lognormal at 5% Significance Level						
2757	Lilliefors Test Statistic				0.17	Lilliefors GOF Test						
2758	5% Lilliefors Critical Value				0.154	Data Not Lognormal at 5% Significance Level						
2759	Data Not Lognormal at 5% Significance Level											
2760												
2761	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2762	Mean in Original Scale				0.649	Mean in Log Scale				-0.527		
2763	SD in Original Scale				0.293	SD in Log Scale				0.437		
2764	95% UTL95% Coverage				1.346	95% BCA UTL95% Coverage				1.2		
2765	95% Bootstrap (%) UTL95% Coverage				1.4	95% UPL (t)				1.221		
2766	90% Percentile (z)				1.034	95% Percentile (z)				1.212		
2767	99% Percentile (z)				1.632	95% USL				2.495		
2768												
2769	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2770	KM Mean of Logged Data				-0.429	95% KM UTL (Lognormal)95% Coverage				1.176		
2771	KM SD of Logged Data				0.313	95% KM UPL (Lognormal)				1.096		
2772	95% KM Percentile Lognormal (z)				1.09	95% KM USL (Lognormal)				1.83		
2773												
2774	Background DL/2 Statistics Assuming Lognormal Distribution											
2775	Mean in Original Scale				0.607	Mean in Log Scale				-0.58		
2776	SD in Original Scale				0.277	SD in Log Scale				0.386		
2777	95% UTL95% Coverage				1.159	95% UPL (t)				1.064		
2778	90% Percentile (z)				0.918	95% Percentile (z)				1.056		
2779	99% Percentile (z)				1.374	95% USL				1.999		
2780	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2781												
2782	Nonparametric Distribution Free Background Statistics											
2783	Data appear to follow a Discernible Distribution at 5% Significance Level											
2784												
2785	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2786	Order of Statistic, r				127	95% UTL with95% Coverage				1.5		
2787	Approx, f used to compute achieved CC				1.671	Approximate Actual Confidence Coefficient achieved by UTL				0.894		
2788	Approximate Sample Size needed to achieve specified CC				153	95% UPL				1.4		
2789	95% USL				1.6	95% KM Chebyshev UPL				1.803		
2790												
2791	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2792	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2793	and consists of observations collected from clean unimpacted locations.											
2794	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2795	represents a background data set and when many onsite observations need to be compared with the BTV.											
2796												
2797	TOTAL PHENOLICS											
2798												
2799	General Statistics											
2800	Total Number of Observations				131	Number of Missing Observations				4		

	A	B	C	D	E	F	G	H	I	J	K	L
2801	Number of Distinct Observations					4						
2802	Number of Detects					2	Number of Non-Detects					129
2803	Number of Distinct Detects					2	Number of Distinct Non-Detects					3
2804	Minimum Detect					0.009	Minimum Non-Detect					0.005
2805	Maximum Detect					0.01	Maximum Non-Detect					0.03
2806	Variance Detected					5.0000E-7	Percent Non-Detects					98.47%
2807	Mean Detected					0.0095	SD Detected					7.0711E-4
2808	Mean of Detected Logged Data					-4.658	SD of Detected Logged Data					0.0745
2809												
2810	Warning: Data set has only 2 Detected Values.											
2811	This is not enough to compute meaningful or reliable statistics and estimates.											
2812												
2813												
2814	Critical Values for Background Threshold Values (BTVs)											
2815	Tolerance Factor K (For UTL)					1.885	d2max (for USL)					3.299
2816												
2817	Normal GOF Test on Detects Only											
2818	Not Enough Data to Perform GOF Test											
2819												
2820	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2821	KM Mean					0.00526	KM SD					0.00104
2822	95% UTL95% Coverage					0.00723	95% KM UPL (t)					0.007
2823	90% KM Percentile (z)					0.0066	95% KM Percentile (z)					0.00698
2824	99% KM Percentile (z)					0.00769	95% KM USL					0.0087
2825												
2826	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2827	Mean					0.0106	SD					0.00545
2828	95% UTL95% Coverage					0.0209	95% UPL (t)					0.0197
2829	90% Percentile (z)					0.0176	95% Percentile (z)					0.0196
2830	99% Percentile (z)					0.0233	95% USL					0.0286
2831	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2832												
2833	Gamma GOF Tests on Detected Observations Only											
2834	Not Enough Data to Perform GOF Test											
2835												
2836	Gamma Statistics on Detected Data Only											
2837	k hat (MLE)					360.7	k star (bias corrected MLE)					N/A
2838	Theta hat (MLE)					2.6340E-5	Theta star (bias corrected MLE)					N/A
2839	nu hat (MLE)					1443	nu star (bias corrected)					N/A
2840	MLE Mean (bias corrected)					N/A						
2841	MLE Sd (bias corrected)					N/A	95% Percentile of Chisquare (2kstar)					N/A
2842												
2843	Estimates of Gamma Parameters using KM Estimates											
2844	Mean (KM)					0.00526	SD (KM)					0.00104
2845	Variance (KM)					1.0840E-6	SE of Mean (KM)					2.6827E-4
2846	k hat (KM)					25.57	k star (KM)					24.99
2847	nu hat (KM)					6700	nu star (KM)					6548
2848	theta hat (KM)					2.0589E-4	theta star (KM)					2.1067E-4
2849	80% gamma percentile (KM)					0.00612	90% gamma percentile (KM)					0.00665
2850	95% gamma percentile (KM)					0.00711	99% gamma percentile (KM)					0.00802

	A	B	C	D	E	F	G	H	I	J	K	L
2851												
2852	The following statistics are computed using gamma distribution and KM estimates											
2853	Upper Limits using Wilson HIlferty (WH) and Hawkins Wixley (HW) Methods											
2854					WH	HW					WH	HW
2855	95% Approx. Gamma UTL with 95% Coverage				0.007	0.00697	95% Approx. Gamma UPL				0.00677	0.00674
2856	95% KM Gamma Percentile				0.00675	0.00672	95% Gamma USL				0.00858	0.00856
2857												
2858	Lognormal GOF Test on Detected Observations Only											
2859	Not Enough Data to Perform GOF Test											
2860												
2861	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2862	Mean in Original Scale				0.00672		Mean in Log Scale				-5.017	
2863	SD in Original Scale				0.00112		SD in Log Scale				0.165	
2864	95% UTL95% Coverage				0.00905		95% BCA UTL95% Coverage				0.00904	
2865	95% Bootstrap (%) UTL95% Coverage				0.00904		95% UPL (t)				0.00872	
2866	90% Percentile (z)				0.00819		95% Percentile (z)				0.0087	
2867	99% Percentile (z)				0.00974		95% USL				0.0114	
2868												
2869	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2870	KM Mean of Logged Data				-5.26		95% KM UTL (Lognormal)95% Coverage				0.00689	
2871	KM SD of Logged Data				0.149		95% KM UPL (Lognormal)				0.00666	
2872	95% KM Percentile Lognormal (z)				0.00664		95% KM USL (Lognormal)				0.00851	
2873												
2874	Background DL/2 Statistics Assuming Lognormal Distribution											
2875	Mean in Original Scale				0.0106		Mean in Log Scale				-4.751	
2876	SD in Original Scale				0.00545		SD in Log Scale				0.714	
2877	95% UTL95% Coverage				0.0332		95% UPL (t)				0.0283	
2878	90% Percentile (z)				0.0216		95% Percentile (z)				0.028	
2879	99% Percentile (z)				0.0455		95% USL				0.0912	
2880	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2881												
2882	Nonparametric Distribution Free Background Statistics											
2883	Data do not follow a Discernible Distribution (0.05)											
2884												
2885	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2886	Order of Statistic, r				128		95% UTL with95% Coverage				0.03	
2887	Approx, f used to compute achieved CC				1.684		Approximate Actual Confidence Coefficient achieved by UTL				0.898	
2888	Approximate Sample Size needed to achieve specified CC				153		95% UPL				0.03	
2889	95% USL				0.03		95% KM Chebyshev UPL				0.00982	
2890												
2891	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2892	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2893	and consists of observations collected from clean unimpacted locations.											
2894	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2895	represents a background data set and when many onsite observations need to be compared with the BTV.											
2896												
2897	TURBIDITY											
2898												
2899	General Statistics											
2900	Total Number of Observations				113		Number of Missing Observations				22	

	A	B	C	D	E	F	G	H	I	J	K	L
2901	Number of Distinct Observations					109						
2902	Number of Detects					110	Number of Non-Detects					3
2903	Number of Distinct Detects					106	Number of Distinct Non-Detects					3
2904	Minimum Detect					1.23	Minimum Non-Detect					2.5
2905	Maximum Detect					169	Maximum Non-Detect					3.6
2906	Variance Detected					1653	Percent Non-Detects					2.655%
2907	Mean Detected					38.18	SD Detected					40.65
2908	Mean of Detected Logged Data					2.967	SD of Detected Logged Data					1.3
2909												
2910	Critical Values for Background Threshold Values (BTVs)											
2911	Tolerance Factor K (For UTL)					1.905	d2max (for USL)					3.251
2912												
2913	Normal GOF Test on Detects Only											
2914	Shapiro Wilk Test Statistic					0.807	Normal GOF Test on Detected Observations Only					
2915	5% Shapiro Wilk P Value					0	Data Not Normal at 5% Significance Level					
2916	Lilliefors Test Statistic					0.193	Lilliefors GOF Test					
2917	5% Lilliefors Critical Value					0.0848	Data Not Normal at 5% Significance Level					
2918	Data Not Normal at 5% Significance Level											
2919												
2920	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2921	KM Mean					37.22	KM SD					40.35
2922	95% UTL95% Coverage					114.1	95% KM UPL (t)					104.4
2923	90% KM Percentile (z)					88.93	95% KM Percentile (z)					103.6
2924	99% KM Percentile (z)					131.1	95% KM USL					168.4
2925												
2926	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2927	Mean					37.21	SD					40.54
2928	95% UTL95% Coverage					114.4	95% UPL (t)					104.7
2929	90% Percentile (z)					89.16	95% Percentile (z)					103.9
2930	99% Percentile (z)					131.5	95% USL					169
2931	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2932												
2933	Gamma GOF Tests on Detected Observations Only											
2934	A-D Test Statistic					0.898	Anderson-Darling GOF Test					
2935	5% A-D Critical Value					0.789	Data Not Gamma Distributed at 5% Significance Level					
2936	K-S Test Statistic					0.0708	Kolmogorov-Smirnov GOF					
2937	5% K-S Critical Value					0.0899	Detected data appear Gamma Distributed at 5% Significance Level					
2938	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
2939												
2940	Gamma Statistics on Detected Data Only											
2941	k hat (MLE)					0.87	k star (bias corrected MLE)					0.852
2942	Theta hat (MLE)					43.89	Theta star (bias corrected MLE)					44.8
2943	nu hat (MLE)					191.4	nu star (bias corrected)					187.5
2944	MLE Mean (bias corrected)					38.18						
2945	MLE Sd (bias corrected)					41.36	95% Percentile of Chisquare (2kstar)					5.405
2946												
2947	Gamma ROS Statistics using Imputed Non-Detects											
2948	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2949	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
2950	For such situations, GROS method may yield incorrect values of UCLs and BTVs											

	A	B	C	D	E	F	G	H	I	J	K	L
2951	This is especially true when the sample size is small.											
2952	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2953	Minimum				0.01		Mean				37.17	
2954	Maximum				169		Median				20	
2955	SD				40.58		CV				1.092	
2956	k hat (MLE)				0.71		k star (bias corrected MLE)				0.697	
2957	Theta hat (MLE)				52.33		Theta star (bias corrected MLE)				53.3	
2958	nu hat (MLE)				160.5		nu star (bias corrected)				157.6	
2959	MLE Mean (bias corrected)				37.17		MLE Sd (bias corrected)				44.51	
2960	95% Percentile of Chisquare (2kstar)				4.754		90% Percentile				93.38	
2961	95% Percentile				126.7		99% Percentile				206.2	
2962	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
2963	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2964				WH	HW					WH	HW	
2965	95% Approx. Gamma UTL with 95% Coverage			144.5	161.5	95% Approx. Gamma UPL				121.2	131.8	
2966	95% Gamma USL			333.1	431.8							
2967												
2968	Estimates of Gamma Parameters using KM Estimates											
2969	Mean (KM)				37.22		SD (KM)				40.35	
2970	Variance (KM)				1628		SE of Mean (KM)				3.814	
2971	k hat (KM)				0.851		k star (KM)				0.834	
2972	nu hat (KM)				192.2		nu star (KM)				188.5	
2973	theta hat (KM)				43.76		theta star (KM)				44.63	
2974	80% gamma percentile (KM)				60.68		90% gamma percentile (KM)				89.59	
2975	95% gamma percentile (KM)				118.9		99% gamma percentile (KM)				188	
2976												
2977	The following statistics are computed using gamma distribution and KM estimates											
2978	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2979				WH	HW					WH	HW	
2980	95% Approx. Gamma UTL with 95% Coverage			138.6	149.4	95% Approx. Gamma UPL				116.8	123	
2981	95% KM Gamma Percentile			115	120.9	95% Gamma USL				312.9	383.5	
2982												
2983	Lognormal GOF Test on Detected Observations Only											
2984	Shapiro Wilk Approximate Test Statistic				0.945		Shapiro Wilk GOF Test					
2985	5% Shapiro Wilk P Value				3.8675E-4		Data Not Lognormal at 5% Significance Level					
2986	Lilliefors Test Statistic				0.0612		Lilliefors GOF Test					
2987	5% Lilliefors Critical Value				0.0848		Detected Data appear Lognormal at 5% Significance Level					
2988	Detected Data appear Approximate Lognormal at 5% Significance Level											
2989												
2990	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2991	Mean in Original Scale				37.23		Mean in Log Scale				2.91	
2992	SD in Original Scale				40.52		SD in Log Scale				1.329	
2993	95% UTL95% Coverage				230.9		95% BCA UTL95% Coverage				138	
2994	95% Bootstrap (%) UTL95% Coverage				140.4		95% UPL (t)				168	
2995	90% Percentile (z)				100.8		95% Percentile (z)				163.4	
2996	99% Percentile (z)				404.1		95% USL				1380	
2997												
2998	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2999	KM Mean of Logged Data				2.903		95% KM UTL (Lognormal)95% Coverage				232	
3000	KM SD of Logged Data				1.335		95% KM UPL (Lognormal)				168.6	

	A	B	C	D	E	F	G	H	I	J	K	L
3001	95% KM Percentile Lognormal (z)					163.9	95% KM USL (Lognormal)					1398
3002												
3003	Background DL/2 Statistics Assuming Lognormal Distribution											
3004	Mean in Original Scale					37.21	Mean in Log Scale					2.899
3005	SD in Original Scale					40.54	SD in Log Scale					1.349
3006	95% UTL95% Coverage					237.1	95% UPL (t)					171.7
3007	90% Percentile (z)					102.3	95% Percentile (z)					166.9
3008	99% Percentile (z)					418.5	95% USL					1456
3009	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3010												
3011	Nonparametric Distribution Free Background Statistics											
3012	Data appear to follow a Discernible Distribution at 5% Significance Level											
3013												
3014	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3015	Order of Statistic, r					110	95% UTL with95% Coverage					138
3016	Approx, f used to compute achieved CC					1.447	Approximate Actual Confidence Coefficient achieved by UTL					0.822
3017	Approximate Sample Size needed to achieve specified CC					153	95% UPL					126.2
3018	95% USL					169	95% KM Chebyshev UPL					213.9
3019												
3020	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3021	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3022	and consists of observations collected from clean unimpacted locations.											
3023	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3024	represents a background data set and when many onsite observations need to be compared with the BTV.											
3025												
3026	BENZENE											
3027												
3028	General Statistics											
3029	Total Number of Observations					135	Number of Missing Observations					0
3030	Number of Distinct Observations					1						
3031	Number of Detects					0	Number of Non-Detects					135
3032	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
3033	Minimum Detect					N/A	Minimum Non-Detect					1
3034	Maximum Detect					N/A	Maximum Non-Detect					1
3035	Variance Detected					N/A	Percent Non-Detects					100%
3036	Mean Detected					N/A	SD Detected					N/A
3037	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
3038												
3039	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
3040	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
3041	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3042												
3043	The data set for variable BENZENE was not processed!											
3044												
3045												
3046	1,1-DICHLOROETHANE											
3047												
3048	General Statistics											
3049	Total Number of Observations					135	Number of Missing Observations					0
3050	Number of Distinct Observations					1						

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L	
3101	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3102													
3103	The data set for variable 1,2-DICHLOROETHANE was not processed!												
3104													
3105													
3106	cis 1,2-DICHLOROETHENE												
3107													
3108	General Statistics												
3109	Total Number of Observations				132	Number of Missing Observations				3			
3110	Number of Distinct Observations				2								
3111	Number of Detects				0	Number of Non-Detects				132			
3112	Number of Distinct Detects				0	Number of Distinct Non-Detects				2			
3113	Minimum Detect				N/A	Minimum Non-Detect				1			
3114	Maximum Detect				N/A	Maximum Non-Detect				2			
3115	Variance Detected				N/A	Percent Non-Detects				100%			
3116	Mean Detected				N/A	SD Detected				N/A			
3117	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A			
3118													
3119	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
3120	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
3121	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3122													
3123	The data set for variable cis 1,2-DICHLOROETHENE was not processed!												
3124													
3125													
3126	trans 1,2-DICHLOROETHENE												
3127													
3128	General Statistics												
3129	Total Number of Observations				135	Number of Missing Observations				0			
3130	Number of Distinct Observations				1								
3131	Number of Detects				0	Number of Non-Detects				135			
3132	Number of Distinct Detects				0	Number of Distinct Non-Detects				1			
3133	Minimum Detect				N/A	Minimum Non-Detect				1			
3134	Maximum Detect				N/A	Maximum Non-Detect				1			
3135	Variance Detected				N/A	Percent Non-Detects				100%			
3136	Mean Detected				N/A	SD Detected				N/A			
3137	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A			
3138													
3139	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
3140	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
3141	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3142													
3143	The data set for variable trans 1,2-DICHLOROETHENE was not processed!												
3144													
3145													
3146	ETHYLBENZENE												
3147													
3148	General Statistics												
3149	Total Number of Observations				135	Number of Missing Observations				0			
3150	Number of Distinct Observations				1								

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L	
3201	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3202													
3203	The data set for variable TETRACHLOROETHENE was not processed!												
3204													
3205													
3206	TOLUENE												
3207													
3208	General Statistics												
3209	Total Number of Observations				133	Number of Missing Observations				2			
3210	Number of Distinct Observations				1								
3211	Number of Detects				0	Number of Non-Detects				133			
3212	Number of Distinct Detects				0	Number of Distinct Non-Detects				1			
3213	Minimum Detect				N/A	Minimum Non-Detect				1			
3214	Maximum Detect				N/A	Maximum Non-Detect				1			
3215	Variance Detected				N/A	Percent Non-Detects				100%			
3216	Mean Detected				N/A	SD Detected				N/A			
3217	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A			
3218													
3219	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
3220	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
3221	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3222													
3223	The data set for variable TOLUENE was not processed!												
3224													
3225													
3226	1,1,1-TRICHLOROETHANE												
3227													
3228	General Statistics												
3229	Total Number of Observations				135	Number of Missing Observations				0			
3230	Number of Distinct Observations				1								
3231	Number of Detects				0	Number of Non-Detects				135			
3232	Number of Distinct Detects				0	Number of Distinct Non-Detects				1			
3233	Minimum Detect				N/A	Minimum Non-Detect				1			
3234	Maximum Detect				N/A	Maximum Non-Detect				1			
3235	Variance Detected				N/A	Percent Non-Detects				100%			
3236	Mean Detected				N/A	SD Detected				N/A			
3237	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A			
3238													
3239	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
3240	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
3241	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
3242													
3243	The data set for variable 1,1,1-TRICHLOROETHANE was not processed!												
3244													
3245													
3246	TRICHLOROETHENE												
3247													
3248	General Statistics												
3249	Total Number of Observations				135	Number of Missing Observations				0			
3250	Number of Distinct Observations				1								

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
3301	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3302												
3303	The data set for variable XYLENES (TOTAL) was not processed!											
3304												
3305												
3306	ARSENIC, TOTAL											
3307												
3308	General Statistics											
3309	Total Number of Observations				35	Number of Missing Observations				100		
3310	Number of Distinct Observations				6							
3311	Number of Detects				0	Number of Non-Detects				35		
3312	Number of Distinct Detects				0	Number of Distinct Non-Detects				6		
3313	Minimum Detect				N/A	Minimum Non-Detect				0.001		
3314	Maximum Detect				N/A	Maximum Non-Detect				0.009		
3315	Variance Detected				N/A	Percent Non-Detects				100%		
3316	Mean Detected				N/A	SD Detected				N/A		
3317	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A		
3318												
3319	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
3320	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
3321	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3322												
3323	The data set for variable ARSENIC, TOTAL was not processed!											
3324												
3325												
3326	ARSENIC, DISSOLVED											
3327												
3328	General Statistics											
3329	Total Number of Observations				34	Number of Missing Observations				101		
3330	Number of Distinct Observations				4							
3331	Number of Detects				0	Number of Non-Detects				34		
3332	Number of Distinct Detects				0	Number of Distinct Non-Detects				4		
3333	Minimum Detect				N/A	Minimum Non-Detect				0.003		
3334	Maximum Detect				N/A	Maximum Non-Detect				0.008		
3335	Variance Detected				N/A	Percent Non-Detects				100%		
3336	Mean Detected				N/A	SD Detected				N/A		
3337	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A		
3338												
3339	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
3340	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
3341	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3342												
3343	The data set for variable ARSENIC, DISSOLVED was not processed!											
3344												
3345												
3346	BARIUM, TOTAL											
3347												
3348	General Statistics											
3349	Total Number of Observations				33	Number of Distinct Observations				9		
3350						Number of Missing Observations				102		

	A	B	C	D	E	F	G	H	I	J	K	L
3351					Minimum	0.07					First Quartile	0.08
3352					Second Largest	0.17					Median	0.09
3353					Maximum	0.17					Third Quartile	0.1
3354					Mean	0.0942					SD	0.0244
3355					Coefficient of Variation	0.259					Skewness	2.017
3356					Mean of logged Data	-2.389					SD of logged Data	0.221
3357												
3358	Critical Values for Background Threshold Values (BTVs)											
3359					Tolerance Factor K (For UTL)	2.176					d2max (for USL)	2.787
3360												
3361	Normal GOF Test											
3362					Shapiro Wilk Test Statistic	0.747					Shapiro Wilk GOF Test	
3363					5% Shapiro Wilk Critical Value	0.931					Data Not Normal at 5% Significance Level	
3364					Lilliefors Test Statistic	0.295					Lilliefors GOF Test	
3365					5% Lilliefors Critical Value	0.152					Data Not Normal at 5% Significance Level	
3366	Data Not Normal at 5% Significance Level											
3367												
3368	Background Statistics Assuming Normal Distribution											
3369				95% UTL with	95% Coverage	0.147					90% Percentile (z)	0.125
3370					95% UPL (t)	0.136					95% Percentile (z)	0.134
3371					95% USL	0.162					99% Percentile (z)	0.151
3372												
3373	Gamma GOF Test											
3374					A-D Test Statistic	2.287					Anderson-Darling Gamma GOF Test	
3375					5% A-D Critical Value	0.746					Data Not Gamma Distributed at 5% Significance Level	
3376					K-S Test Statistic	0.276					Kolmogorov-Smirnov Gamma GOF Test	
3377					5% K-S Critical Value	0.153					Data Not Gamma Distributed at 5% Significance Level	
3378	Data Not Gamma Distributed at 5% Significance Level											
3379												
3380	Gamma Statistics											
3381					k hat (MLE)	19.26					k star (bias corrected MLE)	17.53
3382					Theta hat (MLE)	0.00489					Theta star (bias corrected MLE)	0.00537
3383					nu hat (MLE)	1271					nu star (bias corrected)	1157
3384					MLE Mean (bias corrected)	0.0942					MLE Sd (bias corrected)	0.0225
3385												
3386	Background Statistics Assuming Gamma Distribution											
3387				95% Wilson Hilferty (WH) Approx.	Gamma UPL	0.135					90% Percentile	0.124
3388				95% Hawkins Wixley (HW) Approx.	Gamma UPL	0.135					95% Percentile	0.134
3389				95% WH Approx.	Gamma UTL with	95% Coverage	0.148				99% Percentile	0.154
3390				95% HW Approx.	Gamma UTL with	95% Coverage	0.148					
3391					95% WH USL	0.166					95% HW USL	0.167
3392												
3393	Lognormal GOF Test											
3394					Shapiro Wilk Test Statistic	0.831					Shapiro Wilk Lognormal GOF Test	
3395					5% Shapiro Wilk Critical Value	0.931					Data Not Lognormal at 5% Significance Level	
3396					Lilliefors Test Statistic	0.262					Lilliefors Lognormal GOF Test	
3397					5% Lilliefors Critical Value	0.152					Data Not Lognormal at 5% Significance Level	
3398	Data Not Lognormal at 5% Significance Level											
3399												
3400	Background Statistics assuming Lognormal Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
3401	95% UTL with 95% Coverage					0.148	90% Percentile (z)					0.122
3402	95% UPL (t)					0.134	95% Percentile (z)					0.132
3403	95% USL					0.17	99% Percentile (z)					0.153
3404												
3405	Nonparametric Distribution Free Background Statistics											
3406	Data do not follow a Discernible Distribution (0.05)											
3407												
3408	Nonparametric Upper Limits for Background Threshold Values											
3409	Order of Statistic, r					33	95% UTL with 95% Coverage					0.17
3410	Approx, f used to compute achieved CC					1.737	Approximate Actual Confidence Coefficient achieved by UTL					0.816
3411							Approximate Sample Size needed to achieve specified CC					59
3412	95% Percentile Bootstrap UTL with 95% Coverage					0.17	95% BCA Bootstrap UTL with 95% Coverage					0.17
3413	95% UPL					0.17	90% Percentile					0.12
3414	90% Chebyshev UPL					0.169	95% Percentile					0.146
3415	95% Chebyshev UPL					0.202	99% Percentile					0.17
3416	95% USL					0.17						
3417												
3418	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3419	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3420	and consists of observations collected from clean unimpacted locations.											
3421	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3422	represents a background data set and when many onsite observations need to be compared with the BTV.											
3423												
3424	BARIUM, DISSOLVED											
3425												
3426	General Statistics											
3427	Total Number of Observations					37	Number of Missing Observations					98
3428	Number of Distinct Observations					10						
3429	Number of Detects					34	Number of Non-Detects					3
3430	Number of Distinct Detects					9	Number of Distinct Non-Detects					2
3431	Minimum Detect					0.04	Minimum Non-Detect					0.1
3432	Maximum Detect					0.19	Maximum Non-Detect					0.5
3433	Variance Detected					6.2496E-4	Percent Non-Detects					8.108%
3434	Mean Detected					0.0841	SD Detected					0.025
3435	Mean of Detected Logged Data					-2.509	SD of Detected Logged Data					0.251
3436												
3437	Critical Values for Background Threshold Values (BTVs)											
3438	Tolerance Factor K (For UTL)					2.14	d2max (for USL)					2.835
3439												
3440	Normal GOF Test on Detects Only											
3441	Shapiro Wilk Test Statistic					0.687	Shapiro Wilk GOF Test					
3442	5% Shapiro Wilk Critical Value					0.933	Data Not Normal at 5% Significance Level					
3443	Lilliefors Test Statistic					0.36	Lilliefors GOF Test					
3444	5% Lilliefors Critical Value					0.15	Data Not Normal at 5% Significance Level					
3445	Data Not Normal at 5% Significance Level											
3446												
3447	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
3448	KM Mean					0.0839	KM SD					0.0244
3449	95% UTL95% Coverage					0.136	95% KM UPL (t)					0.126
3450	90% KM Percentile (z)					0.115	95% KM Percentile (z)					0.124

	A	B	C	D	E	F	G	H	I	J	K	L	
3451	99% KM Percentile (z)					0.141	95% KM USL					0.153	
3452													
3453	DL/2 Substitution Background Statistics Assuming Normal Distribution												
3454	Mean					0.0922	SD					0.0455	
3455	95% UTL95% Coverage					0.189	95% UPL (t)					0.17	
3456	90% Percentile (z)					0.15	95% Percentile (z)					0.167	
3457	99% Percentile (z)					0.198	95% USL					0.221	
3458	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
3459													
3460	Gamma GOF Tests on Detected Observations Only												
3461	A-D Test Statistic					3.491	Anderson-Darling GOF Test						
3462	5% A-D Critical Value					0.747	Data Not Gamma Distributed at 5% Significance Level						
3463	K-S Test Statistic					0.337	Kolmogorov-Smirnov GOF						
3464	5% K-S Critical Value					0.151	Data Not Gamma Distributed at 5% Significance Level						
3465	Data Not Gamma Distributed at 5% Significance Level												
3466													
3467	Gamma Statistics on Detected Data Only												
3468	k hat (MLE)					15.2	k star (bias corrected MLE)					13.88	
3469	Theta hat (MLE)					0.00553	Theta star (bias corrected MLE)					0.00606	
3470	nu hat (MLE)					1034	nu star (bias corrected)					943.7	
3471	MLE Mean (bias corrected)					0.0841							
3472	MLE Sd (bias corrected)					0.0226	95% Percentile of Chisquare (2kstar)					41.04	
3473													
3474	Gamma ROS Statistics using Imputed Non-Detects												
3475	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
3476	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
3477	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
3478	This is especially true when the sample size is small.												
3479	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
3480	Minimum					0.04	Mean					0.0839	
3481	Maximum					0.19	Median					0.08	
3482	SD					0.0241	CV					0.287	
3483	k hat (MLE)					16.31	k star (bias corrected MLE)					15	
3484	Theta hat (MLE)					0.00514	Theta star (bias corrected MLE)					0.00559	
3485	nu hat (MLE)					1207	nu star (bias corrected)					1110	
3486	MLE Mean (bias corrected)					0.0839	MLE Sd (bias corrected)					0.0217	
3487	95% Percentile of Chisquare (2kstar)					43.78	90% Percentile					0.113	
3488	95% Percentile					0.122	99% Percentile					0.142	
3489	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
3490	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
3491				WH	HW						WH	HW	
3492	95% Approx. Gamma UTL with 95% Coverage				0.135	0.135	95% Approx. Gamma UPL					0.123	0.123
3493	95% Gamma USL				0.156	0.157							
3494													
3495	Estimates of Gamma Parameters using KM Estimates												
3496	Mean (KM)					0.0839	SD (KM)					0.0244	
3497	Variance (KM)					5.9362E-4	SE of Mean (KM)					0.00419	
3498	k hat (KM)					11.86	k star (KM)					10.91	
3499	nu hat (KM)					877.3	nu star (KM)					807.5	
3500	theta hat (KM)					0.00708	theta star (KM)					0.00769	

	A	B	C	D	E	F	G	H	I	J	K	L
3501					80% gamma percentile (KM)	0.104					90% gamma percentile (KM)	0.118
3502					95% gamma percentile (KM)	0.13					99% gamma percentile (KM)	0.154
3503												
3504	The following statistics are computed using gamma distribution and KM estimates											
3505	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3506					WH	HW					WH	HW
3507				95% Approx. Gamma UTL with 95% Coverage	0.136	0.136				95% Approx. Gamma UPL	0.123	0.123
3508				95% KM Gamma Percentile	0.122	0.121				95% Gamma USL	0.157	0.158
3509												
3510	Lognormal GOF Test on Detected Observations Only											
3511					Shapiro Wilk Test Statistic	0.805				Shapiro Wilk GOF Test		
3512					5% Shapiro Wilk Critical Value	0.933				Data Not Lognormal at 5% Significance Level		
3513					Lilliefors Test Statistic	0.321				Lilliefors GOF Test		
3514					5% Lilliefors Critical Value	0.15				Data Not Lognormal at 5% Significance Level		
3515	Data Not Lognormal at 5% Significance Level											
3516												
3517	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3518					Mean in Original Scale	0.0838				Mean in Log Scale		-2.51
3519					SD in Original Scale	0.024				SD in Log Scale		0.242
3520					95% UTL95% Coverage	0.136				95% BCA UTL95% Coverage		0.19
3521					95% Bootstrap (%) UTL95% Coverage	0.19				95% UPL (t)		0.123
3522					90% Percentile (z)	0.111				95% Percentile (z)		0.121
3523					99% Percentile (z)	0.143				95% USL		0.161
3524												
3525	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
3526					KM Mean of Logged Data	-2.511				95% KM UTL (Lognormal)95% Coverage		0.137
3527					KM SD of Logged Data	0.245				95% KM UPL (Lognormal)		0.124
3528					95% KM Percentile Lognormal (z)	0.122				95% KM USL (Lognormal)		0.163
3529												
3530	Background DL/2 Statistics Assuming Lognormal Distribution											
3531					Mean in Original Scale	0.0922				Mean in Log Scale		-2.461
3532					SD in Original Scale	0.0455				SD in Log Scale		0.363
3533					95% UTL95% Coverage	0.186				95% UPL (t)		0.159
3534					90% Percentile (z)	0.136				95% Percentile (z)		0.155
3535					99% Percentile (z)	0.199				95% USL		0.239
3536	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3537												
3538	Nonparametric Distribution Free Background Statistics											
3539	Data do not follow a Discernible Distribution (0.05)											
3540												
3541	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3542					Order of Statistic, r	37				95% UTL with95% Coverage		0.5
3543					Approx, f used to compute achieved CC	1.947				Approximate Actual Confidence Coefficient achieved by UTL		0.85
3544					Approximate Sample Size needed to achieve specified CC	59				95% UPL		0.5
3545					95% USL	0.5				95% KM Chebyshev UPL		0.192
3546												
3547	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3548	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3549	and consists of observations collected from clean unimpacted locations.											
3550	The use of USL tends to provide a balance between false positives and false negatives provided the data											

	A	B	C	D	E	F	G	H	I	J	K	L
3551	represents a background data set and when many onsite observations need to be compared with the BTV.											
3552												
3553	CADMIUM, TOTAL											
3554												
3555	General Statistics											
3556	Total Number of Observations				34		Number of Missing Observations				101	
3557	Number of Distinct Observations				5							
3558	Number of Detects				0		Number of Non-Detects				34	
3559	Number of Distinct Detects				0		Number of Distinct Non-Detects				5	
3560	Minimum Detect				N/A		Minimum Non-Detect				0.001	
3561	Maximum Detect				N/A		Maximum Non-Detect				0.005	
3562	Variance Detected				N/A		Percent Non-Detects				100%	
3563	Mean Detected				N/A		SD Detected				N/A	
3564	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
3565												
3566	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
3567	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
3568	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3569												
3570	The data set for variable CADMIUM, TOTAL was not processed!											
3571												
3572												
3573	CADMIUM, DISSOLVED											
3574												
3575	General Statistics											
3576	Total Number of Observations				35		Number of Missing Observations				100	
3577	Number of Distinct Observations				4							
3578	Number of Detects				0		Number of Non-Detects				35	
3579	Number of Distinct Detects				0		Number of Distinct Non-Detects				4	
3580	Minimum Detect				N/A		Minimum Non-Detect				0.001	
3581	Maximum Detect				N/A		Maximum Non-Detect				0.01	
3582	Variance Detected				N/A		Percent Non-Detects				100%	
3583	Mean Detected				N/A		SD Detected				N/A	
3584	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
3585												
3586	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
3587	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
3588	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
3589												
3590	The data set for variable CADMIUM, DISSOLVED was not processed!											
3591												
3592												
3593	CHROMIUM, TOTAL											
3594												
3595	General Statistics											
3596	Total Number of Observations				34		Number of Missing Observations				101	
3597	Number of Distinct Observations				7							
3598	Number of Detects				3		Number of Non-Detects				31	
3599	Number of Distinct Detects				3		Number of Distinct Non-Detects				5	
3600	Minimum Detect				0.0023		Minimum Non-Detect				0.0022	

	A	B	C	D	E	F	G	H	I	J	K	L
3601	Maximum Detect					0.01	Maximum Non-Detect					0.05
3602	Variance Detected					1.8343E-5	Percent Non-Detects					91.18%
3603	Mean Detected					0.00507	SD Detected					0.00428
3604	Mean of Detected Logged Data					-5.508	SD of Detected Logged Data					0.79
3605												
3606	Warning: Data set has only 3 Detected Values.											
3607	This is not enough to compute meaningful or reliable statistics and estimates.											
3608												
3609												
3610	Critical Values for Background Threshold Values (BTVs)											
3611	Tolerance Factor K (For UTL)					2.166	d2max (for USL)					2.799
3612												
3613	Normal GOF Test on Detects Only											
3614	Shapiro Wilk Test Statistic					0.808	Shapiro Wilk GOF Test					
3615	5% Shapiro Wilk Critical Value					0.767	Detected Data appear Normal at 5% Significance Level					
3616	Lilliefors Test Statistic					0.36	Lilliefors GOF Test					
3617	5% Lilliefors Critical Value					0.425	Detected Data appear Normal at 5% Significance Level					
3618	Detected Data appear Normal at 5% Significance Level											
3619												
3620	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
3621	KM Mean					0.00259	KM SD					0.00134
3622	95% UTL95% Coverage					0.00549	95% KM UPL (t)					0.00489
3623	90% KM Percentile (z)					0.0043	95% KM Percentile (z)					0.00479
3624	99% KM Percentile (z)					0.0057	95% KM USL					0.00633
3625												
3626	DL/2 Substitution Background Statistics Assuming Normal Distribution											
3627	Mean					0.00474	SD					0.00396
3628	95% UTL95% Coverage					0.0133	95% UPL (t)					0.0115
3629	90% Percentile (z)					0.00982	95% Percentile (z)					0.0113
3630	99% Percentile (z)					0.014	95% USL					0.0158
3631	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
3632												
3633	Gamma GOF Tests on Detected Observations Only											
3634	Not Enough Data to Perform GOF Test											
3635												
3636	Gamma Statistics on Detected Data Only											
3637	k hat (MLE)					2.4	k star (bias corrected MLE)					N/A
3638	Theta hat (MLE)					0.00211	Theta star (bias corrected MLE)					N/A
3639	nu hat (MLE)					14.4	nu star (bias corrected)					N/A
3640	MLE Mean (bias corrected)					N/A						
3641	MLE Sd (bias corrected)					N/A	95% Percentile of Chisquare (2kstar)					N/A
3642												
3643	Gamma ROS Statistics using Imputed Non-Detects											
3644	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
3645	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
3646	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
3647	This is especially true when the sample size is small.											
3648	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
3649	Minimum					0.0023	Mean					0.00956
3650	Maximum					0.01	Median					0.01

	A	B	C	D	E	F	G	H	I	J	K	L
3651	SD					0.00177	CV					0.185
3652	k hat (MLE)					14.4	k star (bias corrected MLE)					13.15
3653	Theta hat (MLE)					6.6430E-4	Theta star (bias corrected MLE)					7.2750E-4
3654	nu hat (MLE)					979.1	nu star (bias corrected)					894
3655	MLE Mean (bias corrected)					0.00956	MLE Sd (bias corrected)					0.00264
3656	95% Percentile of Chisquare (2kstar)					39.25	90% Percentile					0.0131
3657	95% Percentile					0.0143	99% Percentile					0.0167
3658	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
3659	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3660					WH	HW					WH	HW
3661	95% Approx. Gamma UTL with 95% Coverage				0.0159	0.0164	95% Approx. Gamma UPL				0.0143	0.0147
3662	95% Gamma USL				0.0182	0.0191						
3663												
3664	Estimates of Gamma Parameters using KM Estimates											
3665	Mean (KM)				0.00259	SD (KM)				0.00134		
3666	Variance (KM)				1.7873E-6	SE of Mean (KM)				3.1456E-4		
3667	k hat (KM)				3.758	k star (KM)				3.446		
3668	nu hat (KM)				255.5	nu star (KM)				234.3		
3669	theta hat (KM)				6.8968E-4	theta star (KM)				7.5212E-4		
3670	80% gamma percentile (KM)				0.00364	90% gamma percentile (KM)				0.00446		
3671	95% gamma percentile (KM)				0.00523	99% gamma percentile (KM)				0.00688		
3672												
3673	The following statistics are computed using gamma distribution and KM estimates											
3674	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3675					WH	HW					WH	HW
3676	95% Approx. Gamma UTL with 95% Coverage				0.00473	0.00464	95% Approx. Gamma UPL				0.00418	0.00411
3677	95% KM Gamma Percentile				0.0041	0.00402	95% Gamma USL				0.00557	0.00548
3678												
3679	Lognormal GOF Test on Detected Observations Only											
3680	Shapiro Wilk Test Statistic				0.865	Shapiro Wilk GOF Test						
3681	5% Shapiro Wilk Critical Value				0.767	Detected Data appear Lognormal at 5% Significance Level						
3682	Lilliefors Test Statistic				0.331	Lilliefors GOF Test						
3683	5% Lilliefors Critical Value				0.425	Detected Data appear Lognormal at 5% Significance Level						
3684	Detected Data appear Lognormal at 5% Significance Level											
3685												
3686	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3687	Mean in Original Scale				0.00177	Mean in Log Scale				-6.663		
3688	SD in Original Scale				0.0018	SD in Log Scale				0.794		
3689	95% UTL95% Coverage				0.00714	95% BCA UTL95% Coverage				0.01		
3690	95% Bootstrap (%) UTL95% Coverage				0.01	95% UPL (t)				0.005		
3691	90% Percentile (z)				0.00354	95% Percentile (z)				0.00472		
3692	99% Percentile (z)				0.00811	95% USL				0.0118		
3693												
3694	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
3695	KM Mean of Logged Data				-6.011	95% KM UTL (Lognormal)95% Coverage				0.0044		
3696	KM SD of Logged Data				0.27	95% KM UPL (Lognormal)				0.0039		
3697	95% KM Percentile Lognormal (z)				0.00382	95% KM USL (Lognormal)				0.00522		
3698												
3699	Background DL/2 Statistics Assuming Lognormal Distribution											
3700	Mean in Original Scale				0.00474	Mean in Log Scale				-5.535		

	A	B	C	D	E	F	G	H	I	J	K	L
3701	SD in Original Scale					0.00396	SD in Log Scale					0.59
3702	95% UTL95% Coverage					0.0142	95% UPL (t)					0.0109
3703	90% Percentile (z)					0.0084	95% Percentile (z)					0.0104
3704	99% Percentile (z)					0.0156	95% USL					0.0206
3705	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3706												
3707	Nonparametric Distribution Free Background Statistics											
3708	Data appear to follow a Discernible Distribution at 5% Significance Level											
3709												
3710	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3711	Order of Statistic, r				34	95% UTL with95% Coverage					0.05	
3712	Approx, f used to compute achieved CC				1.789	Approximate Actual Confidence Coefficient achieved by UTL					0.825	
3713	Approximate Sample Size needed to achieve specified CC				59	95% UPL					0.02	
3714	95% USL				0.05	95% KM Chebyshev UPL					0.0085	
3715												
3716	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3717	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3718	and consists of observations collected from clean unimpacted locations.											
3719	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3720	represents a background data set and when many onsite observations need to be compared with the BTV.											
3721												
3722	CHROMIUM, DISSOLVED											
3723												
3724	General Statistics											
3725	Total Number of Observations				35	Number of Missing Observations					100	
3726	Number of Distinct Observations				5							
3727	Number of Detects				1	Number of Non-Detects					34	
3728	Number of Distinct Detects				1	Number of Distinct Non-Detects					4	
3729	Minimum Detect				0.02	Minimum Non-Detect					0.0022	
3730	Maximum Detect				0.02	Maximum Non-Detect					0.05	
3731	Variance Detected				N/A	Percent Non-Detects					97.14%	
3732	Mean Detected				0.02	SD Detected					N/A	
3733	Mean of Detected Logged Data				-3.912	SD of Detected Logged Data					N/A	
3734												
3735	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
3736	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
3737												
3738	The data set for variable CHROMIUM, DISSOLVED was not processed!											
3739												
3740												
3741	COPPER, TOTAL											
3742												
3743	General Statistics											
3744	Total Number of Observations				34	Number of Missing Observations					101	
3745	Number of Distinct Observations				4							
3746	Number of Detects				6	Number of Non-Detects					28	
3747	Number of Distinct Detects				3	Number of Distinct Non-Detects					3	
3748	Minimum Detect				0.0084	Minimum Non-Detect					0.0056	
3749	Maximum Detect				0.02	Maximum Non-Detect					0.02	
3750	Variance Detected				3.3627E-5	Percent Non-Detects					82.35%	

	A	B	C	D	E	F	G	H	I	J	K	L
3751	Mean Detected					0.0147	SD Detected					0.0058
3752	Mean of Detected Logged Data					-4.288	SD of Detected Logged Data					0.416
3753												
3754	Critical Values for Background Threshold Values (BTVs)											
3755	Tolerance Factor K (For UTL)					2.166	d2max (for USL)					2.799
3756												
3757	Normal GOF Test on Detects Only											
3758	Shapiro Wilk Test Statistic					0.738	Shapiro Wilk GOF Test					
3759	5% Shapiro Wilk Critical Value					0.788	Data Not Normal at 5% Significance Level					
3760	Lilliefors Test Statistic					0.318	Lilliefors GOF Test					
3761	5% Lilliefors Critical Value					0.325	Detected Data appear Normal at 5% Significance Level					
3762	Detected Data appear Approximate Normal at 5% Significance Level											
3763												
3764	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
3765	KM Mean					0.00792	KM SD					0.0041
3766	95% UTL95% Coverage					0.0168	95% KM UPL (t)					0.015
3767	90% KM Percentile (z)					0.0132	95% KM Percentile (z)					0.0147
3768	99% KM Percentile (z)					0.0175	95% KM USL					0.0194
3769												
3770	DL/2 Substitution Background Statistics Assuming Normal Distribution											
3771	Mean					0.00911	SD					0.00438
3772	95% UTL95% Coverage					0.0186	95% UPL (t)					0.0166
3773	90% Percentile (z)					0.0147	95% Percentile (z)					0.0163
3774	99% Percentile (z)					0.0193	95% USL					0.0214
3775	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
3776												
3777	Gamma GOF Tests on Detected Observations Only											
3778	A-D Test Statistic					0.863	Anderson-Darling GOF Test					
3779	5% A-D Critical Value					0.698	Data Not Gamma Distributed at 5% Significance Level					
3780	K-S Test Statistic					0.339	Kolmogorov-Smirnov GOF					
3781	5% K-S Critical Value					0.333	Data Not Gamma Distributed at 5% Significance Level					
3782	Data Not Gamma Distributed at 5% Significance Level											
3783												
3784	Gamma Statistics on Detected Data Only											
3785	k hat (MLE)					7.304	k star (bias corrected MLE)					3.763
3786	Theta hat (MLE)					0.00202	Theta star (bias corrected MLE)					0.00392
3787	nu hat (MLE)					87.65	nu star (bias corrected)					45.16
3788	MLE Mean (bias corrected)					0.0147						
3789	MLE Sd (bias corrected)					0.00759	95% Percentile of Chisquare (2kstar)					14.83
3790												
3791	Gamma ROS Statistics using Imputed Non-Detects											
3792	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
3793	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
3794	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
3795	This is especially true when the sample size is small.											
3796	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
3797	Minimum					0.0084	Mean					0.0109
3798	Maximum					0.02	Median					0.01
3799	SD					0.00291	CV					0.266
3800	k hat (MLE)					20.71	k star (bias corrected MLE)					18.9

	A	B	C	D	E	F	G	H	I	J	K	L
3801	Theta hat (MLE)					5.2811E-4	Theta star (bias corrected MLE)					5.7862E-4
3802	nu hat (MLE)					1408	nu star (bias corrected)					1285
3803	MLE Mean (bias corrected)					0.0109	MLE Sd (bias corrected)					0.00252
3804	95% Percentile of Chisquare (2kstar)					53.16	90% Percentile					0.0143
3805	95% Percentile					0.0154	99% Percentile					0.0176
3806	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
3807	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3808						WH	HW				WH	HW
3809	95% Approx. Gamma UTL with 95% Coverage					0.0169	0.0168	95% Approx. Gamma UPL			0.0154	0.0154
3810	95% Gamma USL					0.019	0.019					
3811												
3812	Estimates of Gamma Parameters using KM Estimates											
3813	Mean (KM)					0.00792	SD (KM)					0.0041
3814	Variance (KM)					1.6840E-5	SE of Mean (KM)					9.0825E-4
3815	k hat (KM)					3.725	k star (KM)					3.416
3816	nu hat (KM)					253.3	nu star (KM)					232.3
3817	theta hat (KM)					0.00213	theta star (KM)					0.00232
3818	80% gamma percentile (KM)					0.0111	90% gamma percentile (KM)					0.0137
3819	95% gamma percentile (KM)					0.016	99% gamma percentile (KM)					0.0211
3820												
3821	The following statistics are computed using gamma distribution and KM estimates											
3822	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3823						WH	HW				WH	HW
3824	95% Approx. Gamma UTL with 95% Coverage					0.0166	0.0167	95% Approx. Gamma UPL			0.0143	0.0143
3825	95% KM Gamma Percentile					0.014	0.0139	95% Gamma USL			0.0203	0.0205
3826												
3827	Lognormal GOF Test on Detected Observations Only											
3828	Shapiro Wilk Test Statistic					0.763	Shapiro Wilk GOF Test					
3829	5% Shapiro Wilk Critical Value					0.788	Data Not Lognormal at 5% Significance Level					
3830	Lilliefors Test Statistic					0.317	Lilliefors GOF Test					
3831	5% Lilliefors Critical Value					0.325	Detected Data appear Lognormal at 5% Significance Level					
3832	Detected Data appear Approximate Lognormal at 5% Significance Level											
3833												
3834	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3835	Mean in Original Scale					0.00691	Mean in Log Scale					-5.176
3836	SD in Original Scale					0.0049	SD in Log Scale					0.632
3837	95% UTL95% Coverage					0.0222	95% BCA UTL95% Coverage					0.02
3838	95% Bootstrap (%) UTL95% Coverage					0.02	95% UPL (t)					0.0167
3839	90% Percentile (z)					0.0127	95% Percentile (z)					0.016
3840	99% Percentile (z)					0.0246	95% USL					0.0331
3841												
3842	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
3843	KM Mean of Logged Data					-4.929	95% KM UTL (Lognormal)95% Coverage					0.0167
3844	KM SD of Logged Data					0.387	95% KM UPL (Lognormal)					0.0141
3845	95% KM Percentile Lognormal (z)					0.0137	95% KM USL (Lognormal)					0.0214
3846												
3847	Background DL/2 Statistics Assuming Lognormal Distribution											
3848	Mean in Original Scale					0.00911	Mean in Log Scale					-4.821
3849	SD in Original Scale					0.00438	SD in Log Scale					0.529
3850	95% UTL95% Coverage					0.0254	95% UPL (t)					0.02

	A	B	C	D	E	F	G	H	I	J	K	L
3851	90% Percentile (z)					0.0159	95% Percentile (z)					0.0192
3852	99% Percentile (z)					0.0276	95% USL					0.0355
3853	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3854												
3855	Nonparametric Distribution Free Background Statistics											
3856	Data appear to follow a Discernible Distribution at 5% Significance Level											
3857												
3858	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3859	Order of Statistic, r					34	95% UTL with 95% Coverage					0.02
3860	Approx, f used to compute achieved CC					1.789	Approximate Actual Confidence Coefficient achieved by UTL					0.825
3861	Approximate Sample Size needed to achieve specified CC					59	95% UPL					0.02
3862	95% USL					0.02	95% KM Chebyshev UPL					0.0261
3863												
3864	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3865	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3866	and consists of observations collected from clean unimpacted locations.											
3867	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3868	represents a background data set and when many onsite observations need to be compared with the BTV.											
3869												
3870	COPPER, DISSOLVED											
3871												
3872	General Statistics											
3873	Total Number of Observations					36	Number of Missing Observations					99
3874	Number of Distinct Observations					5						
3875	Number of Detects					3	Number of Non-Detects					33
3876	Number of Distinct Detects					2	Number of Distinct Non-Detects					4
3877	Minimum Detect					0.02	Minimum Non-Detect					0.0056
3878	Maximum Detect					0.3	Maximum Non-Detect					0.05
3879	Variance Detected					0.0261	Percent Non-Detects					91.67%
3880	Mean Detected					0.113	SD Detected					0.162
3881	Mean of Detected Logged Data					-3.009	SD of Detected Logged Data					1.563
3882												
3883	Warning: Data set has only 3 Detected Values.											
3884	This is not enough to compute meaningful or reliable statistics and estimates.											
3885												
3886												
3887	Critical Values for Background Threshold Values (BTVs)											
3888	Tolerance Factor K (For UTL)					2.148	d2max (for USL)					2.824
3889												
3890	Normal GOF Test on Detects Only											
3891	Shapiro Wilk Test Statistic					0.75	Shapiro Wilk GOF Test					
3892	5% Shapiro Wilk Critical Value					0.767	Data Not Normal at 5% Significance Level					
3893	Lilliefors Test Statistic					0.385	Lilliefors GOF Test					
3894	5% Lilliefors Critical Value					0.425	Detected Data appear Normal at 5% Significance Level					
3895	Detected Data appear Approximate Normal at 5% Significance Level											
3896												
3897	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
3898	KM Mean					0.0146	KM SD					0.0484
3899	95% UTL 95% Coverage					0.118	95% KM UPL (t)					0.0974
3900	90% KM Percentile (z)					0.0766	95% KM Percentile (z)					0.0941

	A	B	C	D	E	F	G	H	I	J	K	L		
3901	99% KM Percentile (z)					0.127	95% KM USL					0.151		
3902														
3903	DL/2 Substitution Background Statistics Assuming Normal Distribution													
3904	Mean					0.0169	SD					0.0488		
3905	95% UTL95% Coverage					0.122	95% UPL (t)					0.1		
3906	90% Percentile (z)					0.0794	95% Percentile (z)					0.0971		
3907	99% Percentile (z)					0.13	95% USL					0.155		
3908	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons													
3909														
3910	Gamma GOF Tests on Detected Observations Only													
3911	Not Enough Data to Perform GOF Test													
3912														
3913	Gamma Statistics on Detected Data Only													
3914	k hat (MLE)					0.723	k star (bias corrected MLE)					N/A		
3915	Theta hat (MLE)					0.157	Theta star (bias corrected MLE)					N/A		
3916	nu hat (MLE)					4.339	nu star (bias corrected)					N/A		
3917	MLE Mean (bias corrected)					N/A								
3918	MLE Sd (bias corrected)					N/A	95% Percentile of Chisquare (2kstar)					N/A		
3919														
3920	Gamma ROS Statistics using Imputed Non-Detects													
3921	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs													
3922	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)													
3923	For such situations, GROS method may yield incorrect values of UCLs and BTVs													
3924	This is especially true when the sample size is small.													
3925	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
3926	Minimum					0.01	Mean					0.0186		
3927	Maximum					0.3	Median					0.01		
3928	SD					0.0483	CV					2.595		
3929	k hat (MLE)					1.163	k star (bias corrected MLE)					1.084		
3930	Theta hat (MLE)					0.016	Theta star (bias corrected MLE)					0.0172		
3931	nu hat (MLE)					83.7	nu star (bias corrected)					78.06		
3932	MLE Mean (bias corrected)					0.0186	MLE Sd (bias corrected)					0.0179		
3933	95% Percentile of Chisquare (2kstar)					6.314	90% Percentile					0.042		
3934	95% Percentile					0.0542	99% Percentile					0.0823		
3935	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
3936	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
3937						WH	HW						WH	HW
3938	95% Approx. Gamma UTL with 95% Coverage					0.0616	0.0552	95% Approx. Gamma UPL					0.0473	0.0424
3939	95% Gamma USL					0.089	0.0807							
3940														
3941	Estimates of Gamma Parameters using KM Estimates													
3942	Mean (KM)					0.0146	SD (KM)					0.0484		
3943	Variance (KM)					0.00234	SE of Mean (KM)					0.00987		
3944	k hat (KM)					0.0912	k star (KM)					0.102		
3945	nu hat (KM)					6.565	nu star (KM)					7.351		
3946	theta hat (KM)					0.16	theta star (KM)					0.143		
3947	80% gamma percentile (KM)					0.0104	90% gamma percentile (KM)					0.0392		
3948	95% gamma percentile (KM)					0.0846	99% gamma percentile (KM)					0.23		
3949														
3950	The following statistics are computed using gamma distribution and KM estimates													

	A	B	C	D	E	F	G	H	I	J	K	L
3951	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
3952					WH	HW					WH	HW
3953	95% Approx. Gamma UTL with 95% Coverage				0.0526	0.0459	95% Approx. Gamma UPL				0.0388	0.0336
3954	95% KM Gamma Percentile				0.0369	0.032	95% Gamma USL				0.0798	0.0711
3955												
3956	Lognormal GOF Test on Detected Observations Only											
3957	Shapiro Wilk Test Statistic				0.75		Shapiro Wilk GOF Test					
3958	5% Shapiro Wilk Critical Value				0.767		Data Not Lognormal at 5% Significance Level					
3959	Lilliefors Test Statistic				0.385		Lilliefors GOF Test					
3960	5% Lilliefors Critical Value				0.425		Detected Data appear Lognormal at 5% Significance Level					
3961	Detected Data appear Approximate Lognormal at 5% Significance Level											
3962												
3963	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
3964	Mean in Original Scale				0.00966		Mean in Log Scale				-10.47	
3965	SD in Original Scale				0.05		SD in Log Scale				3.7	
3966	95% UTL95% Coverage				0.0807		95% BCA UTL95% Coverage				0.09	
3967	95% Bootstrap (%) UTL95% Coverage				0.3		95% UPL (t)				0.0161	
3968	90% Percentile (z)				0.00327		95% Percentile (z)				0.0125	
3969	99% Percentile (z)				0.156		95% USL				0.983	
3970												
3971	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
3972	KM Mean of Logged Data				-5.002		95% KM UTL (Lognormal)95% Coverage				0.0307	
3973	KM SD of Logged Data				0.707		95% KM UPL (Lognormal)				0.0226	
3974	95% KM Percentile Lognormal (z)				0.0215		95% KM USL (Lognormal)				0.0495	
3975												
3976	Background DL/2 Statistics Assuming Lognormal Distribution											
3977	Mean in Original Scale				0.0169		Mean in Log Scale				-4.778	
3978	SD in Original Scale				0.0488		SD in Log Scale				0.832	
3979	95% UTL95% Coverage				0.0503		95% UPL (t)				0.035	
3980	90% Percentile (z)				0.0245		95% Percentile (z)				0.0331	
3981	99% Percentile (z)				0.0583		95% USL				0.0883	
3982	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
3983												
3984	Nonparametric Distribution Free Background Statistics											
3985	Data appear to follow a Discernible Distribution at 5% Significance Level											
3986												
3987	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
3988	Order of Statistic, r				36		95% UTL with95% Coverage				0.3	
3989	Approx, f used to compute achieved CC				1.895		Approximate Actual Confidence Coefficient achieved by UTL				0.842	
3990	Approximate Sample Size needed to achieve specified CC				59		95% UPL				0.0875	
3991	95% USL				0.3		95% KM Chebyshev UPL				0.228	
3992												
3993	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
3994	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
3995	and consists of observations collected from clean unimpacted locations.											
3996	The use of USL tends to provide a balance between false positives and false negatives provided the data											
3997	represents a background data set and when many onsite observations need to be compared with the BTV.											
3998												
3999	LEAD-FLAMELESS, TOTAL											
4000												

	A	B	C	D	E	F	G	H	I	J	K	L
4001	General Statistics											
4002	Total Number of Observations					34	Number of Missing Observations					101
4003	Number of Distinct Observations					13						
4004	Number of Detects					19	Number of Non-Detects					15
4005	Number of Distinct Detects					10	Number of Distinct Non-Detects					3
4006	Minimum Detect					0.0023	Minimum Non-Detect					0.006
4007	Maximum Detect					0.04	Maximum Non-Detect					0.05
4008	Variance Detected					7.5049E-5	Percent Non-Detects					44.12%
4009	Mean Detected					0.0115	SD Detected					0.00866
4010	Mean of Detected Logged Data					-4.7	SD of Detected Logged Data					0.714
4011												
4012	Critical Values for Background Threshold Values (BTVs)											
4013	Tolerance Factor K (For UTL)					2.166	d2max (for USL)					2.799
4014												
4015	Normal GOF Test on Detects Only											
4016	Shapiro Wilk Test Statistic					0.747	Shapiro Wilk GOF Test					
4017	5% Shapiro Wilk Critical Value					0.901	Data Not Normal at 5% Significance Level					
4018	Lilliefors Test Statistic					0.356	Lilliefors GOF Test					
4019	5% Lilliefors Critical Value					0.197	Data Not Normal at 5% Significance Level					
4020	Data Not Normal at 5% Significance Level											
4021												
4022	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
4023	KM Mean					0.00768	KM SD					0.00776
4024	95% UTL95% Coverage					0.0245	95% KM UPL (t)					0.021
4025	90% KM Percentile (z)					0.0176	95% KM Percentile (z)					0.0205
4026	99% KM Percentile (z)					0.0257	95% KM USL					0.0294
4027												
4028	DL/2 Substitution Background Statistics Assuming Normal Distribution											
4029	Mean					0.00838	SD					0.00818
4030	95% UTL95% Coverage					0.0261	95% UPL (t)					0.0224
4031	90% Percentile (z)					0.0189	95% Percentile (z)					0.0218
4032	99% Percentile (z)					0.0274	95% USL					0.0313
4033	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
4034												
4035	Gamma GOF Tests on Detected Observations Only											
4036	A-D Test Statistic					1.024	Anderson-Darling GOF Test					
4037	5% A-D Critical Value					0.751	Data Not Gamma Distributed at 5% Significance Level					
4038	K-S Test Statistic					0.281	Kolmogorov-Smirnov GOF					
4039	5% K-S Critical Value					0.201	Data Not Gamma Distributed at 5% Significance Level					
4040	Data Not Gamma Distributed at 5% Significance Level											
4041												
4042	Gamma Statistics on Detected Data Only											
4043	k hat (MLE)					2.324	k star (bias corrected MLE)					1.992
4044	Theta hat (MLE)					0.00493	Theta star (bias corrected MLE)					0.00575
4045	nu hat (MLE)					88.32	nu star (bias corrected)					75.71
4046	MLE Mean (bias corrected)					0.0115						
4047	MLE Sd (bias corrected)					0.00811	95% Percentile of Chisquare (2kstar)					9.463
4048												
4049	Gamma ROS Statistics using Imputed Non-Detects											
4050	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

	A	B	C	D	E	F	G	H	I	J	K	L
4051	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
4052	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
4053	This is especially true when the sample size is small.											
4054	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
4055				Minimum	0.0023					Mean	0.0108	
4056				Maximum	0.04					Median	0.01	
4057				SD	0.00644					CV	0.596	
4058				k hat (MLE)	3.977					k star (bias corrected MLE)	3.646	
4059				Theta hat (MLE)	0.00272					Theta star (bias corrected MLE)	0.00297	
4060				nu hat (MLE)	270.5					nu star (bias corrected)	247.9	
4061				MLE Mean (bias corrected)	0.0108					MLE Sd (bias corrected)	0.00566	
4062				95% Percentile of Chisquare (2kstar)	14.49					90% Percentile	0.0184	
4063				95% Percentile	0.0215					99% Percentile	0.0281	
4064	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
4065	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4066				WH	HW					WH	HW	
4067	95% Approx. Gamma UTL with 95% Coverage			0.0258	0.0264	95% Approx. Gamma UPL				0.0216	0.0219	
4068	95% Gamma USL			0.0325	0.0339							
4069												
4070	Estimates of Gamma Parameters using KM Estimates											
4071				Mean (KM)	0.00768					SD (KM)	0.00776	
4072				Variance (KM)	6.0263E-5					SE of Mean (KM)	0.00139	
4073				k hat (KM)	0.979					k star (KM)	0.913	
4074				nu hat (KM)	66.6					nu star (KM)	62.06	
4075				theta hat (KM)	0.00784					theta star (KM)	0.00842	
4076				80% gamma percentile (KM)	0.0125					90% gamma percentile (KM)	0.0181	
4077				95% gamma percentile (KM)	0.0238					99% gamma percentile (KM)	0.0371	
4078												
4079	The following statistics are computed using gamma distribution and KM estimates											
4080	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4081				WH	HW					WH	HW	
4082	95% Approx. Gamma UTL with 95% Coverage			0.0263	0.0271	95% Approx. Gamma UPL				0.0204	0.0206	
4083	95% KM Gamma Percentile			0.0196	0.0197	95% Gamma USL				0.0364	0.0388	
4084												
4085	Lognormal GOF Test on Detected Observations Only											
4086	Shapiro Wilk Test Statistic				0.895	Shapiro Wilk GOF Test						
4087	5% Shapiro Wilk Critical Value				0.901	Data Not Lognormal at 5% Significance Level						
4088	Lilliefors Test Statistic				0.237	Lilliefors GOF Test						
4089	5% Lilliefors Critical Value				0.197	Data Not Lognormal at 5% Significance Level						
4090	Data Not Lognormal at 5% Significance Level											
4091												
4092	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
4093	Mean in Original Scale				0.00781	Mean in Log Scale				-5.203		
4094	SD in Original Scale				0.00768	SD in Log Scale				0.841		
4095	95% UTL95% Coverage				0.034	95% BCA UTL95% Coverage				0.02		
4096	95% Bootstrap (%) UTL95% Coverage				0.04	95% UPL (t)				0.0233		
4097	90% Percentile (z)				0.0162	95% Percentile (z)				0.0219		
4098	99% Percentile (z)				0.0389	95% USL				0.0579		
4099												
4100	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
4101	KM Mean of Logged Data					-5.24	95% KM UTL (Lognormal)95% Coverage					0.0316
4102	KM SD of Logged Data					0.824	95% KM UPL (Lognormal)					0.0218
4103	95% KM Percentile Lognormal (z)					0.0206	95% KM USL (Lognormal)					0.0533
4104												
4105	Background DL/2 Statistics Assuming Lognormal Distribution											
4106	Mean in Original Scale					0.00838	Mean in Log Scale					-5.124
4107	SD in Original Scale					0.00818	SD in Log Scale					0.799
4108	95% UTL95% Coverage					0.0337	95% UPL (t)					0.0235
4109	90% Percentile (z)					0.0166	95% Percentile (z)					0.0222
4110	99% Percentile (z)					0.0382	95% USL					0.0558
4111	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
4112												
4113	Nonparametric Distribution Free Background Statistics											
4114	Data do not follow a Discernible Distribution (0.05)											
4115												
4116	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
4117	Order of Statistic, r					34	95% UTL with95% Coverage					0.05
4118	Approx, f used to compute achieved CC					1.789	Approximate Actual Confidence Coefficient achieved by UTL					0.825
4119	Approximate Sample Size needed to achieve specified CC					59	95% UPL					0.0425
4120	95% USL					0.05	95% KM Chebyshev UPL					0.042
4121												
4122	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
4123	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
4124	and consists of observations collected from clean unimpacted locations.											
4125	The use of USL tends to provide a balance between false positives and false negatives provided the data											
4126	represents a background data set and when many onsite observations need to be compared with the BTV.											
4127												
4128	LEAD, DISSOLVED											
4129												
4130	General Statistics											
4131	Total Number of Observations					36	Number of Missing Observations					99
4132	Number of Distinct Observations					3						
4133	Number of Detects					2	Number of Non-Detects					34
4134	Number of Distinct Detects					2	Number of Distinct Non-Detects					2
4135	Minimum Detect					0.006	Minimum Non-Detect					0.0022
4136	Maximum Detect					0.05	Maximum Non-Detect					0.006
4137	Variance Detected					9.6800E-4	Percent Non-Detects					94.44%
4138	Mean Detected					0.028	SD Detected					0.0311
4139	Mean of Detected Logged Data					-4.056	SD of Detected Logged Data					1.499
4140												
4141	Warning: Data set has only 2 Detected Values.											
4142	This is not enough to compute meaningful or reliable statistics and estimates.											
4143												
4144												
4145	Critical Values for Background Threshold Values (BTVs)											
4146	Tolerance Factor K (For UTL)					2.148	d2max (for USL)					2.824
4147												
4148	Normal GOF Test on Detects Only											
4149	Not Enough Data to Perform GOF Test											
4150												

	A	B	C	D	E	F	G	H	I	J	K	L
4151	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
4152	KM Mean				0.00363	KM SD				0.00786		
4153	95% UTL95% Coverage				0.0205	95% KM UPL (t)				0.0171		
4154	90% KM Percentile (z)				0.0137	95% KM Percentile (z)				0.0166		
4155	99% KM Percentile (z)				0.0219	95% KM USL				0.0258		
4156												
4157	DL/2 Substitution Background Statistics Assuming Normal Distribution											
4158	Mean				0.00413	SD				0.00791		
4159	95% UTL95% Coverage				0.0211	95% UPL (t)				0.0177		
4160	90% Percentile (z)				0.0143	95% Percentile (z)				0.0171		
4161	99% Percentile (z)				0.0225	95% USL				0.0265		
4162	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
4163												
4164	Gamma GOF Tests on Detected Observations Only											
4165	Not Enough Data to Perform GOF Test											
4166												
4167	Gamma Statistics on Detected Data Only											
4168	k hat (MLE)				1.18	k star (bias corrected MLE)				N/A		
4169	Theta hat (MLE)				0.0237	Theta star (bias corrected MLE)				N/A		
4170	nu hat (MLE)				4.719	nu star (bias corrected)				N/A		
4171	MLE Mean (bias corrected)				N/A							
4172	MLE Sd (bias corrected)				N/A	95% Percentile of Chisquare (2kstar)				N/A		
4173												
4174	Estimates of Gamma Parameters using KM Estimates											
4175	Mean (KM)				0.00363	SD (KM)				0.00786		
4176	Variance (KM)				6.1814E-5	SE of Mean (KM)				0.00185		
4177	k hat (KM)				0.214	k star (KM)				0.214		
4178	nu hat (KM)				15.38	nu star (KM)				15.43		
4179	theta hat (KM)				0.017	theta star (KM)				0.017		
4180	80% gamma percentile (KM)				0.00495	90% gamma percentile (KM)				0.011		
4181	95% gamma percentile (KM)				0.0184	99% gamma percentile (KM)				0.0385		
4182												
4183	The following statistics are computed using gamma distribution and KM estimates											
4184	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4185					WH	HW					WH	HW
4186	95% Approx. Gamma UTL with 95% Coverage				0.0112	0.0102	95% Approx. Gamma UPL				0.00879	0.00801
4187	95% KM Gamma Percentile				0.00845	0.0077	95% Gamma USL				0.0157	0.0145
4188												
4189	Lognormal GOF Test on Detected Observations Only											
4190	Not Enough Data to Perform GOF Test											
4191												
4192	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
4193	Mean in Original Scale				0.00157	Mean in Log Scale				-17.7		
4194	SD in Original Scale				0.00836	SD in Log Scale				6.488		
4195	95% UTL95% Coverage				0.0233	95% BCA UTL95% Coverage				0.05		
4196	95% Bootstrap (%) UTL95% Coverage				0.05	95% UPL (t)				0.00138		
4197	90% Percentile (z)				8.4195E-5	95% Percentile (z)				8.8904E-4		
4198	99% Percentile (z)				0.074	95% USL				1.864		
4199												
4200	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
4201				KM Mean of Logged Data		-6.005				95% KM UTL (Lognormal)	95% Coverage	0.00778
4202				KM SD of Logged Data		0.535				95% KM UPL (Lognormal)		0.00616
4203				95% KM Percentile Lognormal (z)		0.00594				95% KM USL (Lognormal)		0.0112
4204												
4205				Background DL/2 Statistics Assuming Lognormal Distribution								
4206				Mean in Original Scale		0.00413				Mean in Log Scale		-5.851
4207				SD in Original Scale		0.00791				SD in Log Scale		0.618
4208				95% UTL	95% Coverage	0.0109				95% UPL (t)		0.00829
4209				90% Percentile (z)		0.00635				95% Percentile (z)		0.00795
4210				99% Percentile (z)		0.0121				95% USL		0.0165
4211				DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.								
4212												
4213				Nonparametric Distribution Free Background Statistics								
4214				Data do not follow a Discernible Distribution (0.05)								
4215												
4216				Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)								
4217				Order of Statistic, r		36				95% UTL with 95% Coverage		0.05
4218				Approx, f used to compute achieved CC		1.895				Approximate Actual Confidence Coefficient achieved by UTL		0.842
4219				Approximate Sample Size needed to achieve specified CC		59				95% UPL		0.0126
4220				95% USL		0.05				95% KM Chebyshev UPL		0.0384
4221												
4222				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.								
4223				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers								
4224				and consists of observations collected from clean unimpacted locations.								
4225				The use of USL tends to provide a balance between false positives and false negatives provided the data								
4226				represents a background data set and when many onsite observations need to be compared with the BTV.								
4227												
4228				MERCURY, TOTAL								
4229												
4230				General Statistics								
4231				Total Number of Observations		35				Number of Missing Observations		100
4232				Number of Distinct Observations		2						
4233				Number of Detects		0				Number of Non-Detects		35
4234				Number of Distinct Detects		0				Number of Distinct Non-Detects		2
4235				Minimum Detect		N/A				Minimum Non-Detect		5.0000E-4
4236				Maximum Detect		N/A				Maximum Non-Detect		0.001
4237				Variance Detected		N/A				Percent Non-Detects		100%
4238				Mean Detected		N/A				SD Detected		N/A
4239				Mean of Detected Logged Data		N/A				SD of Detected Logged Data		N/A
4240												
4241				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!								
4242				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!								
4243				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).								
4244												
4245				The data set for variable MERCURY, TOTAL was not processed!								
4246												
4247												
4248				MERCURY, DISSOLVED								
4249												
4250				General Statistics								

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
4301	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4302	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4303	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4304												
4305	The data set for variable SELENIUM, DISSOLVED was not processed!											
4306												
4307												
4308	SILVER, TOTAL											
4309												
4310	General Statistics											
4311	Total Number of Observations				34		Number of Missing Observations				101	
4312	Number of Distinct Observations				5							
4313	Number of Detects				1		Number of Non-Detects				33	
4314	Number of Distinct Detects				1		Number of Distinct Non-Detects				4	
4315	Minimum Detect				0.05		Minimum Non-Detect				0.0022	
4316	Maximum Detect				0.05		Maximum Non-Detect				0.01	
4317	Variance Detected				N/A		Percent Non-Detects				97.06%	
4318	Mean Detected				0.05		SD Detected				N/A	
4319	Mean of Detected Logged Data				-2.996		SD of Detected Logged Data				N/A	
4320												
4321	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
4322	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
4323												
4324	The data set for variable SILVER, TOTAL was not processed!											
4325												
4326												
4327	SILVER, DISSOLVED											
4328												
4329	General Statistics											
4330	Total Number of Observations				35		Number of Missing Observations				100	
4331	Number of Distinct Observations				4							
4332	Number of Detects				0		Number of Non-Detects				35	
4333	Number of Distinct Detects				0		Number of Distinct Non-Detects				4	
4334	Minimum Detect				N/A		Minimum Non-Detect				0.0022	
4335	Maximum Detect				N/A		Maximum Non-Detect				0.02	
4336	Variance Detected				N/A		Percent Non-Detects				100%	
4337	Mean Detected				N/A		SD Detected				N/A	
4338	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
4339												
4340	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4341	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4342	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4343												
4344	The data set for variable SILVER, DISSOLVED was not processed!											
4345												
4346												
4347	ZINC, TOTAL											
4348												
4349	General Statistics											
4350	Total Number of Observations				34		Number of Missing Observations				101	

	A	B	C	D	E	F	G	H	I	J	K	L
4351	Number of Distinct Observations					11						
4352	Number of Detects					23	Number of Non-Detects					11
4353	Number of Distinct Detects					11	Number of Distinct Non-Detects					1
4354	Minimum Detect					0.019	Minimum Non-Detect					0.06
4355	Maximum Detect					0.16	Maximum Non-Detect					0.06
4356	Variance Detected					0.00144	Percent Non-Detects					32.35%
4357	Mean Detected					0.053	SD Detected					0.038
4358	Mean of Detected Logged Data					-3.166	SD of Detected Logged Data					0.686
4359												
4360	Critical Values for Background Threshold Values (BTVs)											
4361	Tolerance Factor K (For UTL)					2.166	d2max (for USL)					2.799
4362												
4363	Normal GOF Test on Detects Only											
4364	Shapiro Wilk Test Statistic					0.842	Shapiro Wilk GOF Test					
4365	5% Shapiro Wilk Critical Value					0.914	Data Not Normal at 5% Significance Level					
4366	Lilliefors Test Statistic					0.185	Lilliefors GOF Test					
4367	5% Lilliefors Critical Value					0.18	Data Not Normal at 5% Significance Level					
4368	Data Not Normal at 5% Significance Level											
4369												
4370	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
4371	KM Mean					0.0451	KM SD					0.0333
4372	95% UTL95% Coverage					0.117	95% KM UPL (t)					0.102
4373	90% KM Percentile (z)					0.0877	95% KM Percentile (z)					0.0998
4374	99% KM Percentile (z)					0.122	95% KM USL					0.138
4375												
4376	DL/2 Substitution Background Statistics Assuming Normal Distribution											
4377	Mean					0.0456	SD					0.0329
4378	95% UTL95% Coverage					0.117	95% UPL (t)					0.102
4379	90% Percentile (z)					0.0877	95% Percentile (z)					0.0997
4380	99% Percentile (z)					0.122	95% USL					0.138
4381	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
4382												
4383	Gamma GOF Tests on Detected Observations Only											
4384	A-D Test Statistic					0.885	Anderson-Darling GOF Test					
4385	5% A-D Critical Value					0.753	Data Not Gamma Distributed at 5% Significance Level					
4386	K-S Test Statistic					0.201	Kolmogorov-Smirnov GOF					
4387	5% K-S Critical Value					0.183	Data Not Gamma Distributed at 5% Significance Level					
4388	Data Not Gamma Distributed at 5% Significance Level											
4389												
4390	Gamma Statistics on Detected Data Only											
4391	k hat (MLE)					2.344	k star (bias corrected MLE)					2.067
4392	Theta hat (MLE)					0.0226	Theta star (bias corrected MLE)					0.0256
4393	nu hat (MLE)					107.8	nu star (bias corrected)					95.1
4394	MLE Mean (bias corrected)					0.053						
4395	MLE Sd (bias corrected)					0.0369	95% Percentile of Chisquare (2kstar)					9.705
4396												
4397	Gamma ROS Statistics using Imputed Non-Detects											
4398	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
4399	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
4400	For such situations, GROS method may yield incorrect values of UCLs and BTVs											

	A	B	C	D	E	F	G	H	I	J	K	L
4401	This is especially true when the sample size is small.											
4402	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
4403	Minimum				0.01		Mean				0.0452	
4404	Maximum				0.16		Median				0.0348	
4405	SD				0.0341		CV				0.755	
4406	k hat (MLE)				2.228		k star (bias corrected MLE)				2.051	
4407	Theta hat (MLE)				0.0203		Theta star (bias corrected MLE)				0.022	
4408	nu hat (MLE)				151.5		nu star (bias corrected)				139.5	
4409	MLE Mean (bias corrected)				0.0452		MLE Sd (bias corrected)				0.0316	
4410	95% Percentile of Chisquare (2kstar)				9.652		90% Percentile				0.0874	
4411	95% Percentile				0.106		99% Percentile				0.148	
4412	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
4413	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4414				WH	HW					WH	HW	
4415	95% Approx. Gamma UTL with 95% Coverage			0.135	0.139	95% Approx. Gamma UPL				0.108	0.11	
4416	95% Gamma USL			0.179	0.19							
4417												
4418	Estimates of Gamma Parameters using KM Estimates											
4419	Mean (KM)				0.0451		SD (KM)				0.0333	
4420	Variance (KM)				0.00111		SE of Mean (KM)				0.00602	
4421	k hat (KM)				1.836		k star (KM)				1.693	
4422	nu hat (KM)				124.8		nu star (KM)				115.2	
4423	theta hat (KM)				0.0246		theta star (KM)				0.0266	
4424	80% gamma percentile (KM)				0.0688		90% gamma percentile (KM)				0.0912	
4425	95% gamma percentile (KM)				0.113		99% gamma percentile (KM)				0.161	
4426												
4427	The following statistics are computed using gamma distribution and KM estimates											
4428	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4429				WH	HW					WH	HW	
4430	95% Approx. Gamma UTL with 95% Coverage			0.127	0.129	95% Approx. Gamma UPL				0.103	0.103	
4431	95% KM Gamma Percentile			0.0992	0.0996	95% Gamma USL				0.166	0.174	
4432												
4433	Lognormal GOF Test on Detected Observations Only											
4434	Shapiro Wilk Test Statistic				0.895		Shapiro Wilk GOF Test					
4435	5% Shapiro Wilk Critical Value				0.914		Data Not Lognormal at 5% Significance Level					
4436	Lilliefors Test Statistic				0.209		Lilliefors GOF Test					
4437	5% Lilliefors Critical Value				0.18		Data Not Lognormal at 5% Significance Level					
4438	Data Not Lognormal at 5% Significance Level											
4439												
4440	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
4441	Mean in Original Scale				0.0455		Mean in Log Scale				-3.303	
4442	SD in Original Scale				0.0335		SD in Log Scale				0.64	
4443	95% UTL95% Coverage				0.147		95% BCA UTL95% Coverage				0.128	
4444	95% Bootstrap (%) UTL95% Coverage				0.16		95% UPL (t)				0.11	
4445	90% Percentile (z)				0.0835		95% Percentile (z)				0.105	
4446	99% Percentile (z)				0.163		95% USL				0.22	
4447												
4448	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
4449	KM Mean of Logged Data				-3.315		95% KM UTL (Lognormal)95% Coverage				0.142	
4450	KM SD of Logged Data				0.628		95% KM UPL (Lognormal)				0.107	

	A	B	C	D	E	F	G	H	I	J	K	L
4451	95% KM Percentile Lognormal (z)					0.102	95% KM USL (Lognormal)					0.211
4452												
4453	Background DL/2 Statistics Assuming Lognormal Distribution											
4454	Mean in Original Scale					0.0456	Mean in Log Scale					-3.276
4455	SD in Original Scale					0.0329	SD in Log Scale					0.583
4456	95% UTL95% Coverage					0.134	95% UPL (t)					0.103
4457	90% Percentile (z)					0.0798	95% Percentile (z)					0.0986
4458	99% Percentile (z)					0.147	95% USL					0.193
4459	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
4460												
4461	Nonparametric Distribution Free Background Statistics											
4462	Data do not follow a Discernible Distribution (0.05)											
4463												
4464	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
4465	Order of Statistic, r					34	95% UTL with95% Coverage					0.16
4466	Approx, f used to compute achieved CC					1.789	Approximate Actual Confidence Coefficient achieved by UTL					0.825
4467	Approximate Sample Size needed to achieve specified CC					59	95% UPL					0.123
4468	95% USL					0.16	95% KM Chebyshev UPL					0.192
4469												
4470	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
4471	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
4472	and consists of observations collected from clean unimpacted locations.											
4473	The use of USL tends to provide a balance between false positives and false negatives provided the data											
4474	represents a background data set and when many onsite observations need to be compared with the BTV.											
4475												
4476	ZINC, DISSOLVED											
4477												
4478	General Statistics											
4479	Total Number of Observations					36	Number of Missing Observations					99
4480	Number of Distinct Observations					8						
4481	Number of Detects					22	Number of Non-Detects					14
4482	Number of Distinct Detects					8	Number of Distinct Non-Detects					2
4483	Minimum Detect					0.01	Minimum Non-Detect					0.02
4484	Maximum Detect					0.28	Maximum Non-Detect					0.06
4485	Variance Detected					0.0042	Percent Non-Detects					38.89%
4486	Mean Detected					0.0554	SD Detected					0.0648
4487	Mean of Detected Logged Data					-3.398	SD of Detected Logged Data					0.992
4488												
4489	Critical Values for Background Threshold Values (BTVs)											
4490	Tolerance Factor K (For UTL)					2.148	d2max (for USL)					2.824
4491												
4492	Normal GOF Test on Detects Only											
4493	Shapiro Wilk Test Statistic					0.699	Shapiro Wilk GOF Test					
4494	5% Shapiro Wilk Critical Value					0.911	Data Not Normal at 5% Significance Level					
4495	Lilliefors Test Statistic					0.298	Lilliefors GOF Test					
4496	5% Lilliefors Critical Value					0.184	Data Not Normal at 5% Significance Level					
4497	Data Not Normal at 5% Significance Level											
4498												
4499	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
4500	KM Mean					0.0401	KM SD					0.0532

	A	B	C	D	E	F	G	H	I	J	K	L
4501	95% UTL95% Coverage					0.154	95% KM UPL (t)					0.131
4502	90% KM Percentile (z)					0.108	95% KM Percentile (z)					0.128
4503	99% KM Percentile (z)					0.164	95% KM USL					0.19
4504												
4505	DL/2 Substitution Background Statistics Assuming Normal Distribution											
4506	Mean					0.0449	SD					0.052
4507	95% UTL95% Coverage					0.157	95% UPL (t)					0.134
4508	90% Percentile (z)					0.112	95% Percentile (z)					0.131
4509	99% Percentile (z)					0.166	95% USL					0.192
4510	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
4511												
4512	Gamma GOF Tests on Detected Observations Only											
4513	A-D Test Statistic					1.368	Anderson-Darling GOF Test					
4514	5% A-D Critical Value					0.768	Data Not Gamma Distributed at 5% Significance Level					
4515	K-S Test Statistic					0.314	Kolmogorov-Smirnov GOF					
4516	5% K-S Critical Value					0.19	Data Not Gamma Distributed at 5% Significance Level					
4517	Data Not Gamma Distributed at 5% Significance Level											
4518												
4519	Gamma Statistics on Detected Data Only											
4520	k hat (MLE)					1.13	k star (bias corrected MLE)					1.006
4521	Theta hat (MLE)					0.049	Theta star (bias corrected MLE)					0.055
4522	nu hat (MLE)					49.73	nu star (bias corrected)					44.28
4523	MLE Mean (bias corrected)					0.0554						
4524	MLE Sd (bias corrected)					0.0552	95% Percentile of Chisquare (2kstar)					6.016
4525												
4526	Gamma ROS Statistics using Imputed Non-Detects											
4527	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
4528	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
4529	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
4530	This is especially true when the sample size is small.											
4531	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
4532	Minimum					0.01	Mean					0.0414
4533	Maximum					0.28	Median					0.02
4534	SD					0.054	CV					1.304
4535	k hat (MLE)					1.131	k star (bias corrected MLE)					1.055
4536	Theta hat (MLE)					0.0366	Theta star (bias corrected MLE)					0.0392
4537	nu hat (MLE)					81.45	nu star (bias corrected)					75.99
4538	MLE Mean (bias corrected)					0.0414	MLE Sd (bias corrected)					0.0403
4539	95% Percentile of Chisquare (2kstar)					6.205	90% Percentile					0.0941
4540	95% Percentile					0.122	99% Percentile					0.186
4541	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
4542	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4543				WH	HW						WH	HW
4544	95% Approx. Gamma UTL with 95% Coverage			0.158	0.162	95% Approx. Gamma UPL					0.12	0.12
4545	95% Gamma USL			0.232	0.248							
4546												
4547	Estimates of Gamma Parameters using KM Estimates											
4548	Mean (KM)					0.0401	SD (KM)					0.0532
4549	Variance (KM)					0.00283	SE of Mean (KM)					0.0091
4550	k hat (KM)					0.568	k star (KM)					0.539

	A	B	C	D	E	F	G	H	I	J	K	L
4551					nu hat (KM)	40.89					nu star (KM)	38.81
4552					theta hat (KM)	0.0706					theta star (KM)	0.0743
4553					80% gamma percentile (KM)	0.066					90% gamma percentile (KM)	0.107
4554					95% gamma percentile (KM)	0.15					99% gamma percentile (KM)	0.255
4555												
4556	The following statistics are computed using gamma distribution and KM estimates											
4557	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
4558					WH	HW					WH	HW
4559	95% Approx. Gamma UTL with 95% Coverage				0.148	0.149	95% Approx. Gamma UPL				0.113	0.111
4560	95% KM Gamma Percentile				0.108	0.106	95% Gamma USL				0.215	0.225
4561												
4562	Lognormal GOF Test on Detected Observations Only											
4563	Shapiro Wilk Test Statistic				0.888	Shapiro Wilk GOF Test						
4564	5% Shapiro Wilk Critical Value				0.911	Data Not Lognormal at 5% Significance Level						
4565	Lilliefors Test Statistic				0.289	Lilliefors GOF Test						
4566	5% Lilliefors Critical Value				0.184	Data Not Lognormal at 5% Significance Level						
4567	Data Not Lognormal at 5% Significance Level											
4568												
4569	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
4570	Mean in Original Scale				0.0414	Mean in Log Scale				-3.671		
4571	SD in Original Scale				0.0537	SD in Log Scale				0.923		
4572	95% UTL95% Coverage				0.185	95% BCA UTL95% Coverage				0.19		
4573	95% Bootstrap (%) UTL95% Coverage				0.28	95% UPL (t)				0.124		
4574	90% Percentile (z)				0.0831	95% Percentile (z)				0.116		
4575	99% Percentile (z)				0.218	95% USL				0.345		
4576												
4577	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
4578	KM Mean of Logged Data				-3.703	95% KM UTL (Lognormal)95% Coverage				0.161		
4579	KM SD of Logged Data				0.873	95% KM UPL (Lognormal)				0.11		
4580	95% KM Percentile Lognormal (z)				0.104	95% KM USL (Lognormal)				0.29		
4581												
4582	Background DL/2 Statistics Assuming Lognormal Distribution											
4583	Mean in Original Scale				0.0449	Mean in Log Scale				-3.47		
4584	SD in Original Scale				0.052	SD in Log Scale				0.795		
4585	95% UTL95% Coverage				0.171	95% UPL (t)				0.121		
4586	90% Percentile (z)				0.0861	95% Percentile (z)				0.115		
4587	99% Percentile (z)				0.197	95% USL				0.293		
4588	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
4589												
4590	Nonparametric Distribution Free Background Statistics											
4591	Data do not follow a Discernible Distribution (0.05)											
4592												
4593	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
4594	Order of Statistic, r				36	95% UTL with95% Coverage				0.28		
4595	Approx, f used to compute achieved CC				1.895	Approximate Actual Confidence Coefficient achieved by UTL				0.842		
4596	Approximate Sample Size needed to achieve specified CC				59	95% UPL				0.178		
4597	95% USL				0.28	95% KM Chebyshev UPL				0.275		
4598												
4599	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
4600	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											

	A	B	C	D	E	F	G	H	I	J	K	L
4601	and consists of observations collected from clean unimpacted locations.											
4602	The use of USL tends to provide a balance between false positives and false negatives provided the data											
4603	represents a background data set and when many onsite observations need to be compared with the BTV.											
4604												
4605	BROMOFORM											
4606												
4607	General Statistics											
4608	Total Number of Observations					82	Number of Missing Observations					53
4609	Number of Distinct Observations					2						
4610	Number of Detects					0	Number of Non-Detects					82
4611	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4612	Minimum Detect					N/A	Minimum Non-Detect					1
4613	Maximum Detect					N/A	Maximum Non-Detect					2
4614	Variance Detected					N/A	Percent Non-Detects					100%
4615	Mean Detected					N/A	SD Detected					N/A
4616	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4617												
4618	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4619	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4620	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4621												
4622	The data set for variable BROMOFORM was not processed!											
4623												
4624												
4625	BROMOMETHANE											
4626												
4627	General Statistics											
4628	Total Number of Observations					82	Number of Missing Observations					53
4629	Number of Distinct Observations					3						
4630	Number of Detects					0	Number of Non-Detects					82
4631	Number of Distinct Detects					0	Number of Distinct Non-Detects					3
4632	Minimum Detect					N/A	Minimum Non-Detect					1
4633	Maximum Detect					N/A	Maximum Non-Detect					5
4634	Variance Detected					N/A	Percent Non-Detects					100%
4635	Mean Detected					N/A	SD Detected					N/A
4636	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4637												
4638	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4639	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4640	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4641												
4642	The data set for variable BROMOMETHANE was not processed!											
4643												
4644												
4645	CARBON TETRACHLORIDE											
4646												
4647	General Statistics											
4648	Total Number of Observations					82	Number of Missing Observations					53
4649	Number of Distinct Observations					1						
4650	Number of Detects					0	Number of Non-Detects					82

	A	B	C	D	E	F	G	H	I	J	K	L
4651				Number of Distinct Detects		0				Number of Distinct Non-Detects		1
4652				Minimum Detect	N/A					Minimum Non-Detect		1
4653				Maximum Detect	N/A					Maximum Non-Detect		1
4654				Variance Detected	N/A					Percent Non-Detects		100%
4655				Mean Detected	N/A					SD Detected		N/A
4656				Mean of Detected Logged Data	N/A					SD of Detected Logged Data		N/A
4657												
4658	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4659	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4660	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4661												
4662	The data set for variable CARBON TETRACHLORIDE was not processed!											
4663												
4664												
4665	CHLORO BENZENE											
4666												
4667	General Statistics											
4668			Total Number of Observations		82					Number of Missing Observations		53
4669			Number of Distinct Observations		2							
4670			Number of Detects		0					Number of Non-Detects		82
4671			Number of Distinct Detects		0					Number of Distinct Non-Detects		2
4672			Minimum Detect	N/A						Minimum Non-Detect		1
4673			Maximum Detect	N/A						Maximum Non-Detect		2
4674			Variance Detected	N/A						Percent Non-Detects		100%
4675			Mean Detected	N/A						SD Detected		N/A
4676			Mean of Detected Logged Data	N/A						SD of Detected Logged Data		N/A
4677												
4678	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4679	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4680	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4681												
4682	The data set for variable CHLORO BENZENE was not processed!											
4683												
4684												
4685	CHLOROETHANE											
4686												
4687	General Statistics											
4688			Total Number of Observations		82					Number of Missing Observations		53
4689			Number of Distinct Observations		2							
4690			Number of Detects		0					Number of Non-Detects		82
4691			Number of Distinct Detects		0					Number of Distinct Non-Detects		2
4692			Minimum Detect	N/A						Minimum Non-Detect		1
4693			Maximum Detect	N/A						Maximum Non-Detect		2
4694			Variance Detected	N/A						Percent Non-Detects		100%
4695			Mean Detected	N/A						SD Detected		N/A
4696			Mean of Detected Logged Data	N/A						SD of Detected Logged Data		N/A
4697												
4698	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4699	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4700	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											

	A	B	C	D	E	F	G	H	I	J	K	L
4701												
4702	The data set for variable CHLOROETHANE was not processed!											
4703												
4704												
4705	DIBROMOCHLOROMETHANE											
4706												
4707	General Statistics											
4708	Total Number of Observations					82	Number of Missing Observations					53
4709	Number of Distinct Observations					1						
4710	Number of Detects					0	Number of Non-Detects					82
4711	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
4712	Minimum Detect					N/A	Minimum Non-Detect					1
4713	Maximum Detect					N/A	Maximum Non-Detect					1
4714	Variance Detected					N/A	Percent Non-Detects					100%
4715	Mean Detected					N/A	SD Detected					N/A
4716	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4717												
4718	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4719	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4720	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4721												
4722	The data set for variable DIBROMOCHLOROMETHANE was not processed!											
4723												
4724												
4725	CHLOROMETHANE											
4726												
4727	General Statistics											
4728	Total Number of Observations					82	Number of Missing Observations					53
4729	Number of Distinct Observations					4						
4730	Number of Detects					0	Number of Non-Detects					82
4731	Number of Distinct Detects					0	Number of Distinct Non-Detects					4
4732	Minimum Detect					N/A	Minimum Non-Detect					1
4733	Maximum Detect					N/A	Maximum Non-Detect					5
4734	Variance Detected					N/A	Percent Non-Detects					100%
4735	Mean Detected					N/A	SD Detected					N/A
4736	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4737												
4738	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4739	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4740	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4741												
4742	The data set for variable CHLOROMETHANE was not processed!											
4743												
4744												
4745	3-CHLORO-1-PROPENE											
4746												
4747	General Statistics											
4748	Total Number of Observations					66	Number of Missing Observations					69
4749	Number of Distinct Observations					2						
4750	Number of Detects					0	Number of Non-Detects					66

	A	B	C	D	E	F	G	H	I	J	K	L
4751	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4752	Minimum Detect					N/A	Minimum Non-Detect					1
4753	Maximum Detect					N/A	Maximum Non-Detect					2
4754	Variance Detected					N/A	Percent Non-Detects					100%
4755	Mean Detected					N/A	SD Detected					N/A
4756	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4757												
4758	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4759	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4760	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4761												
4762	The data set for variable 3-CHLORO-1-PROPENE was not processed!											
4763												
4764												
4765	1,2-DICHLOROBENZENE											
4766												
4767	General Statistics											
4768	Total Number of Observations					68	Number of Missing Observations					67
4769	Number of Distinct Observations					2						
4770	Number of Detects					0	Number of Non-Detects					68
4771	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4772	Minimum Detect					N/A	Minimum Non-Detect					1
4773	Maximum Detect					N/A	Maximum Non-Detect					2
4774	Variance Detected					N/A	Percent Non-Detects					100%
4775	Mean Detected					N/A	SD Detected					N/A
4776	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4777												
4778	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4779	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4780	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4781												
4782	The data set for variable 1,2-DICHLOROBENZENE was not processed!											
4783												
4784												
4785	1,3-DICHLOROBENZENE											
4786												
4787	General Statistics											
4788	Total Number of Observations					66	Number of Missing Observations					69
4789	Number of Distinct Observations					2						
4790	Number of Detects					0	Number of Non-Detects					66
4791	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4792	Minimum Detect					N/A	Minimum Non-Detect					1
4793	Maximum Detect					N/A	Maximum Non-Detect					2
4794	Variance Detected					N/A	Percent Non-Detects					100%
4795	Mean Detected					N/A	SD Detected					N/A
4796	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4797												
4798	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4799	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4800	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											

	A	B	C	D	E	F	G	H	I	J	K	L
4801												
4802	The data set for variable 1,3-DICHLOROBENZENE was not processed!											
4803												
4804												
4805	1,4-DICHLOROBENZENE											
4806												
4807	General Statistics											
4808	Total Number of Observations					67	Number of Missing Observations					68
4809	Number of Distinct Observations					2						
4810	Number of Detects					0	Number of Non-Detects					67
4811	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4812	Minimum Detect					N/A	Minimum Non-Detect					1
4813	Maximum Detect					N/A	Maximum Non-Detect					2
4814	Variance Detected					N/A	Percent Non-Detects					100%
4815	Mean Detected					N/A	SD Detected					N/A
4816	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4817												
4818	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4819	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4820	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4821												
4822	The data set for variable 1,4-DICHLOROBENZENE was not processed!											
4823												
4824												
4825	DICHLORODIFLUOROMETHANE											
4826												
4827	General Statistics											
4828	Total Number of Observations					67	Number of Missing Observations					68
4829	Number of Distinct Observations					2						
4830	Number of Detects					0	Number of Non-Detects					67
4831	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
4832	Minimum Detect					N/A	Minimum Non-Detect					1
4833	Maximum Detect					N/A	Maximum Non-Detect					2
4834	Variance Detected					N/A	Percent Non-Detects					100%
4835	Mean Detected					N/A	SD Detected					N/A
4836	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4837												
4838	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4839	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4840	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4841												
4842	The data set for variable DICHLORODIFLUOROMETHANE was not processed!											
4843												
4844												
4845	1,2-DICHLOROPROPANE											
4846												
4847	General Statistics											
4848	Total Number of Observations					82	Number of Missing Observations					53
4849	Number of Distinct Observations					2						
4850	Number of Detects					0	Number of Non-Detects					82

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
4901												
4902	The data set for variable trans 1,3-DICHLOROPROPENE was not processed!											
4903												
4904												
4905	2-BUTANONE (MEK)											
4906												
4907	General Statistics											
4908	Total Number of Observations					67	Number of Missing Observations					68
4909	Number of Distinct Observations					1						
4910	Number of Detects					0	Number of Non-Detects					67
4911	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
4912	Minimum Detect					N/A	Minimum Non-Detect					10
4913	Maximum Detect					N/A	Maximum Non-Detect					10
4914	Variance Detected					N/A	Percent Non-Detects					100%
4915	Mean Detected					N/A	SD Detected					N/A
4916	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4917												
4918	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4919	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4920	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4921												
4922	The data set for variable 2-BUTANONE (MEK) was not processed!											
4923												
4924												
4925	4-METHYL-2-PENTANONE											
4926												
4927	General Statistics											
4928	Total Number of Observations					67	Number of Missing Observations					68
4929	Number of Distinct Observations					1						
4930	Number of Detects					0	Number of Non-Detects					67
4931	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
4932	Minimum Detect					N/A	Minimum Non-Detect					5
4933	Maximum Detect					N/A	Maximum Non-Detect					5
4934	Variance Detected					N/A	Percent Non-Detects					100%
4935	Mean Detected					N/A	SD Detected					N/A
4936	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
4937												
4938	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
4939	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
4940	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
4941												
4942	The data set for variable 4-METHYL-2-PENTANONE was not processed!											
4943												
4944												
4945	1,1,1,2-TETRACHLOROETHANE											
4946												
4947	General Statistics											
4948	Total Number of Observations					68	Number of Missing Observations					67
4949	Number of Distinct Observations					1						
4950	Number of Detects					0	Number of Non-Detects					68

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
5001												
5002	The data set for variable 1,1,2-TRICHLOROETHANE was not processed!											
5003												
5004												
5005	TRICHLOROFLUOROMETHANE											
5006												
5007	General Statistics											
5008	Total Number of Observations					80	Number of Missing Observations					55
5009	Number of Distinct Observations					1						
5010	Number of Detects					0	Number of Non-Detects					80
5011	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
5012	Minimum Detect					N/A	Minimum Non-Detect					1
5013	Maximum Detect					N/A	Maximum Non-Detect					1
5014	Variance Detected					N/A	Percent Non-Detects					100%
5015	Mean Detected					N/A	SD Detected					N/A
5016	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5017												
5018	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5019	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5020	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5021												
5022	The data set for variable TRICHLOROFLUOROMETHANE was not processed!											
5023												
5024												
5025	1,2,3-TRICHLOROPROPANE											
5026												
5027	General Statistics											
5028	Total Number of Observations					68	Number of Missing Observations					67
5029	Number of Distinct Observations					2						
5030	Number of Detects					0	Number of Non-Detects					68
5031	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
5032	Minimum Detect					N/A	Minimum Non-Detect					1
5033	Maximum Detect					N/A	Maximum Non-Detect					2
5034	Variance Detected					N/A	Percent Non-Detects					100%
5035	Mean Detected					N/A	SD Detected					N/A
5036	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5037												
5038	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5039	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5040	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5041												
5042	The data set for variable 1,2,3-TRICHLOROPROPANE was not processed!											
5043												
5044												
5045	ACETONE											
5046												
5047	General Statistics											
5048	Total Number of Observations					50	Number of Missing Observations					85
5049	Number of Distinct Observations					2						
5050	Number of Detects					0	Number of Non-Detects					50

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
5101												
5102	The data set for variable BROMOCHLOROMETHANE (CHLOROBROMOMETHANE) was not processed!											
5103												
5104												
5105	BROMODICHLOROMETHANE											
5106												
5107	General Statistics											
5108	Total Number of Observations					67	Number of Missing Observations					68
5109	Number of Distinct Observations					1						
5110	Number of Detects					0	Number of Non-Detects					67
5111	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
5112	Minimum Detect					N/A	Minimum Non-Detect					1
5113	Maximum Detect					N/A	Maximum Non-Detect					1
5114	Variance Detected					N/A	Percent Non-Detects					100%
5115	Mean Detected					N/A	SD Detected					N/A
5116	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5117												
5118	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5119	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5120	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5121												
5122	The data set for variable BROMODICHLOROMETHANE was not processed!											
5123												
5124												
5125	CARBON DISULFIDE											
5126												
5127	General Statistics											
5128	Total Number of Observations					50	Number of Missing Observations					85
5129	Number of Distinct Observations					2						
5130	Number of Detects					0	Number of Non-Detects					50
5131	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
5132	Minimum Detect					N/A	Minimum Non-Detect					1
5133	Maximum Detect					N/A	Maximum Non-Detect					5
5134	Variance Detected					N/A	Percent Non-Detects					100%
5135	Mean Detected					N/A	SD Detected					N/A
5136	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5137												
5138	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5139	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5140	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5141												
5142	The data set for variable CARBON DISULFIDE was not processed!											
5143												
5144												
5145	CHLOROFORM											
5146												
5147	General Statistics											
5148	Total Number of Observations					67	Number of Missing Observations					68
5149	Number of Distinct Observations					1						
5150	Number of Detects					0	Number of Non-Detects					67

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
5201												
5202	The data set for variable trans 1,4-DICHLORO-2-BUTENE was not processed!											
5203												
5204												
5205	2-HEXANONE											
5206												
5207	General Statistics											
5208	Total Number of Observations					50	Number of Missing Observations					85
5209	Number of Distinct Observations					2						
5210	Number of Detects					0	Number of Non-Detects					50
5211	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
5212	Minimum Detect					N/A	Minimum Non-Detect					5
5213	Maximum Detect					N/A	Maximum Non-Detect					10
5214	Variance Detected					N/A	Percent Non-Detects					100%
5215	Mean Detected					N/A	SD Detected					N/A
5216	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5217												
5218	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5219	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5220	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5221												
5222	The data set for variable 2-HEXANONE was not processed!											
5223												
5224												
5225	DIBROMOMETHANE											
5226												
5227	General Statistics											
5228	Total Number of Observations					50	Number of Missing Observations					85
5229	Number of Distinct Observations					2						
5230	Number of Detects					0	Number of Non-Detects					50
5231	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
5232	Minimum Detect					N/A	Minimum Non-Detect					1
5233	Maximum Detect					N/A	Maximum Non-Detect					5
5234	Variance Detected					N/A	Percent Non-Detects					100%
5235	Mean Detected					N/A	SD Detected					N/A
5236	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5237												
5238	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5239	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5240	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5241												
5242	The data set for variable DIBROMOMETHANE was not processed!											
5243												
5244												
5245	IODOMETHANE											
5246												
5247	General Statistics											
5248	Total Number of Observations					50	Number of Missing Observations					85
5249	Number of Distinct Observations					2						
5250	Number of Detects					0	Number of Non-Detects					50

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
5301												
5302	The data set for variable VINYL ACETATE was not processed!											
5303												
5304												
5305	ANTIMONY											
5306												
5307	General Statistics											
5308	Total Number of Observations					5	Number of Missing Observations					130
5309	Number of Distinct Observations					1						
5310	Number of Detects					0	Number of Non-Detects					5
5311	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
5312	Minimum Detect					N/A	Minimum Non-Detect					0.0022
5313	Maximum Detect					N/A	Maximum Non-Detect					0.0022
5314	Variance Detected					N/A	Percent Non-Detects					100%
5315	Mean Detected					N/A	SD Detected					N/A
5316	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5317												
5318	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5319	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5320	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5321												
5322	The data set for variable ANTIMONY was not processed!											
5323												
5324												
5325	BERYLLIUM											
5326												
5327	General Statistics											
5328	Total Number of Observations					5	Number of Missing Observations					130
5329	Number of Distinct Observations					1						
5330	Number of Detects					0	Number of Non-Detects					5
5331	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
5332	Minimum Detect					N/A	Minimum Non-Detect					0.0011
5333	Maximum Detect					N/A	Maximum Non-Detect					0.0011
5334	Variance Detected					N/A	Percent Non-Detects					100%
5335	Mean Detected					N/A	SD Detected					N/A
5336	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5337												
5338	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5339	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5340	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5341												
5342	The data set for variable BERYLLIUM was not processed!											
5343												
5344												
5345	COBALT											
5346												
5347	General Statistics											
5348	Total Number of Observations					7	Number of Missing Observations					128
5349	Number of Distinct Observations					2						
5350	Number of Detects					0	Number of Non-Detects					7

	A	B	C	D	E	F	G	H	I	J	K	L
5351	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
5352	Minimum Detect					N/A	Minimum Non-Detect					0.0056
5353	Maximum Detect					N/A	Maximum Non-Detect					0.006
5354	Variance Detected					N/A	Percent Non-Detects					100%
5355	Mean Detected					N/A	SD Detected					N/A
5356	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
5357												
5358	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
5359	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
5360	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
5361												
5362	The data set for variable COBALT was not processed!											
5363												
5364												
5365	NICKEL											
5366												
5367	General Statistics											
5368	Total Number of Observations					5	Number of Distinct Observations					4
5369							Number of Missing Observations					130
5370	Minimum					0.0065	First Quartile					0.0066
5371	Second Largest					0.008	Median					0.0066
5372	Maximum					0.0087	Third Quartile					0.008
5373	Mean					0.00728	SD					0.00101
5374	Coefficient of Variation					0.139	Skewness					0.867
5375	Mean of logged Data					-4.93	SD of logged Data					0.135
5376												
5377	Critical Values for Background Threshold Values (BTVs)											
5378	Tolerance Factor K (For UTL)					4.203	d2max (for USL)					1.671
5379												
5380	Normal GOF Test											
5381	Shapiro Wilk Test Statistic					0.796	Shapiro Wilk GOF Test					
5382	5% Shapiro Wilk Critical Value					0.762	Data appear Normal at 5% Significance Level					
5383	Lilliefors Test Statistic					0.35	Lilliefors GOF Test					
5384	5% Lilliefors Critical Value					0.343	Data Not Normal at 5% Significance Level					
5385	Data appear Approximate Normal at 5% Significance Level											
5386												
5387	Background Statistics Assuming Normal Distribution											
5388	95% UTL with		95% Coverage		0.0115	90% Percentile (z)					0.00857	
5389			95% UPL (t)		0.00964	95% Percentile (z)					0.00894	
5390			95% USL		0.00897	99% Percentile (z)					0.00963	
5391												
5392	Gamma GOF Test											
5393	A-D Test Statistic					0.656	Anderson-Darling Gamma GOF Test					
5394	5% A-D Critical Value					0.678	Detected data appear Gamma Distributed at 5% Significance Level					
5395	K-S Test Statistic					0.375	Kolmogorov-Smirnov Gamma GOF Test					
5396	5% K-S Critical Value					0.357	Data Not Gamma Distributed at 5% Significance Level					
5397	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
5398												
5399	Gamma Statistics											
5400	k hat (MLE)					67.83	k star (bias corrected MLE)					27.26

	A	B	C	D	E	F	G	H	I	J	K	L
5401	Theta hat (MLE)					1.0733E-4	Theta star (bias corrected MLE)					2.6701E-4
5402	nu hat (MLE)					678.3	nu star (bias corrected)					272.6
5403	MLE Mean (bias corrected)					0.00728	MLE Sd (bias corrected)					0.00139
5404												
5405	Background Statistics Assuming Gamma Distribution											
5406	95% Wilson Hilferty (WH) Approx. Gamma UPL					0.0098	90% Percentile					0.00911
5407	95% Hawkins Wixley (HW) Approx. Gamma UPL					0.00982	95% Percentile					0.00971
5408	95% WH Approx. Gamma UTL with 95% Coverage					0.0122	99% Percentile					0.0109
5409	95% HW Approx. Gamma UTL with 95% Coverage					0.0123						
5410	95% WH USL					0.00902	95% HW USL					0.00903
5411												
5412	Lognormal GOF Test											
5413	Shapiro Wilk Test Statistic					0.796	Shapiro Wilk Lognormal GOF Test					
5414	5% Shapiro Wilk Critical Value					0.762	Data appear Lognormal at 5% Significance Level					
5415	Lilliefors Test Statistic					0.35	Lilliefors Lognormal GOF Test					
5416	5% Lilliefors Critical Value					0.343	Data Not Lognormal at 5% Significance Level					
5417	Data appear Approximate Lognormal at 5% Significance Level											
5418												
5419	Background Statistics assuming Lognormal Distribution											
5420	95% UTL with 95% Coverage					0.0127	90% Percentile (z)					0.00859
5421	95% UPL (t)					0.0099	95% Percentile (z)					0.00902
5422	95% USL					0.00905	99% Percentile (z)					0.00988
5423												
5424	Nonparametric Distribution Free Background Statistics											
5425	Data appear Approximate Normal at 5% Significance Level											
5426												
5427	Nonparametric Upper Limits for Background Threshold Values											
5428	Order of Statistic, r					5	95% UTL with 95% Coverage					0.0087
5429	Approx, f used to compute achieved CC					0.263	Approximate Actual Confidence Coefficient achieved by UTL					0.226
5430							Approximate Sample Size needed to achieve specified CC					59
5431	95% Percentile Bootstrap UTL with 95% Coverage					0.0087	95% BCA Bootstrap UTL with 95% Coverage					0.0087
5432	95% UPL					0.0087	90% Percentile					0.00842
5433	90% Chebyshev UPL					0.0106	95% Percentile					0.00856
5434	95% Chebyshev UPL					0.0121	99% Percentile					0.00867
5435	95% USL					0.0087						
5436												
5437	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
5438	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
5439	and consists of observations collected from clean unimpacted locations.											
5440	The use of USL tends to provide a balance between false positives and false negatives provided the data											
5441	represents a background data set and when many onsite observations need to be compared with the BTV.											
5442												
5443	THALLIUM											
5444												
5445	General Statistics											
5446	Total Number of Observations					5	Number of Missing Observations					130
5447	Number of Distinct Observations					1						
5448	Number of Detects					0	Number of Non-Detects					5
5449	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
5450	Minimum Detect					N/A	Minimum Non-Detect					0.0011

[illegible]



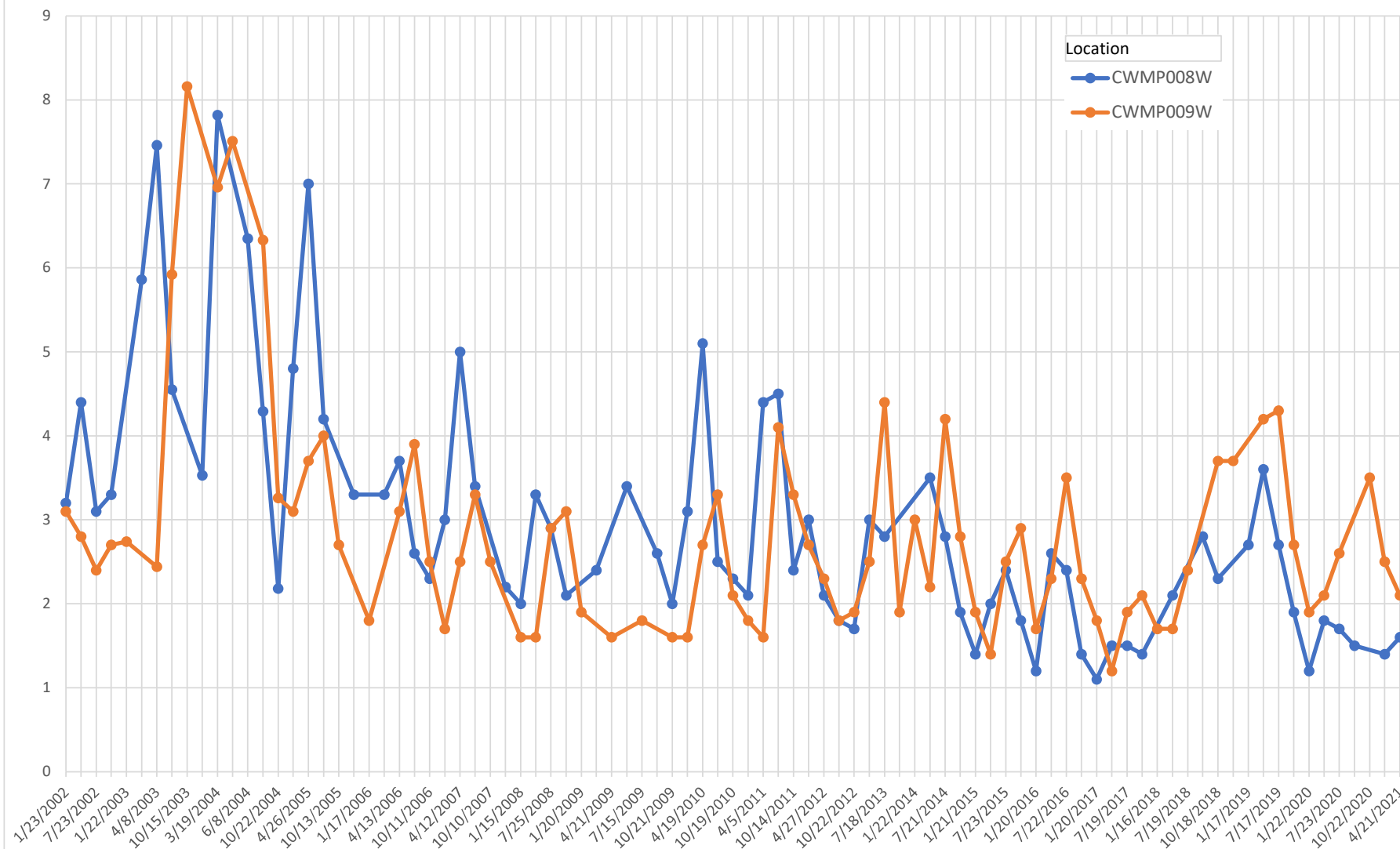
VOC TREND PLOTS

ATTACHMENT 3

Flag Parameter

Max of Result

BENZENE



Flag Parameter

Max of Result

1,1-DICHLOROETHANE

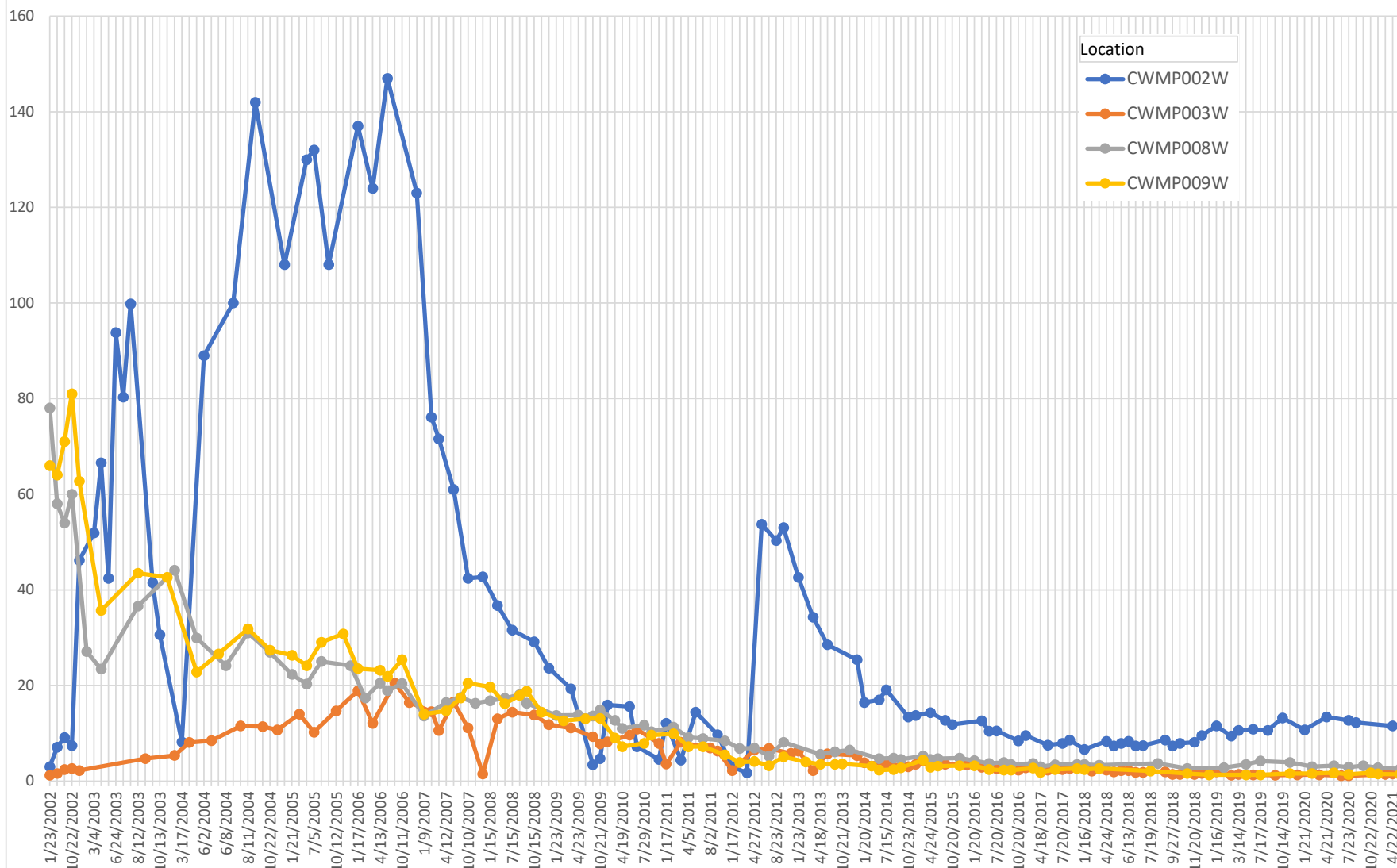
Location

CWMP002W

CWMP003W

CWMP008W

CWMP009W

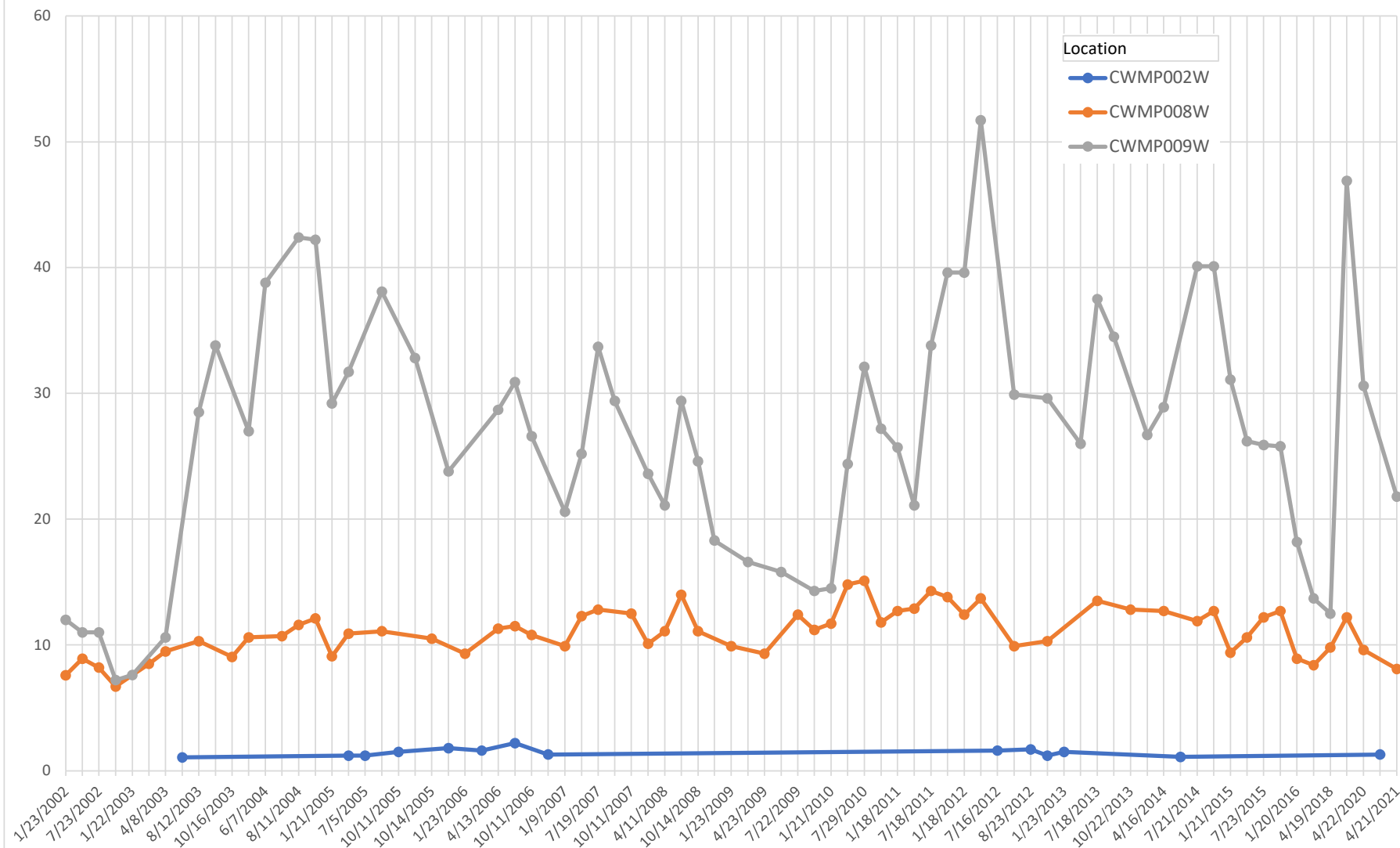


Sample Date

Flag Parameter

Max of Result

CHLOROBENZENE

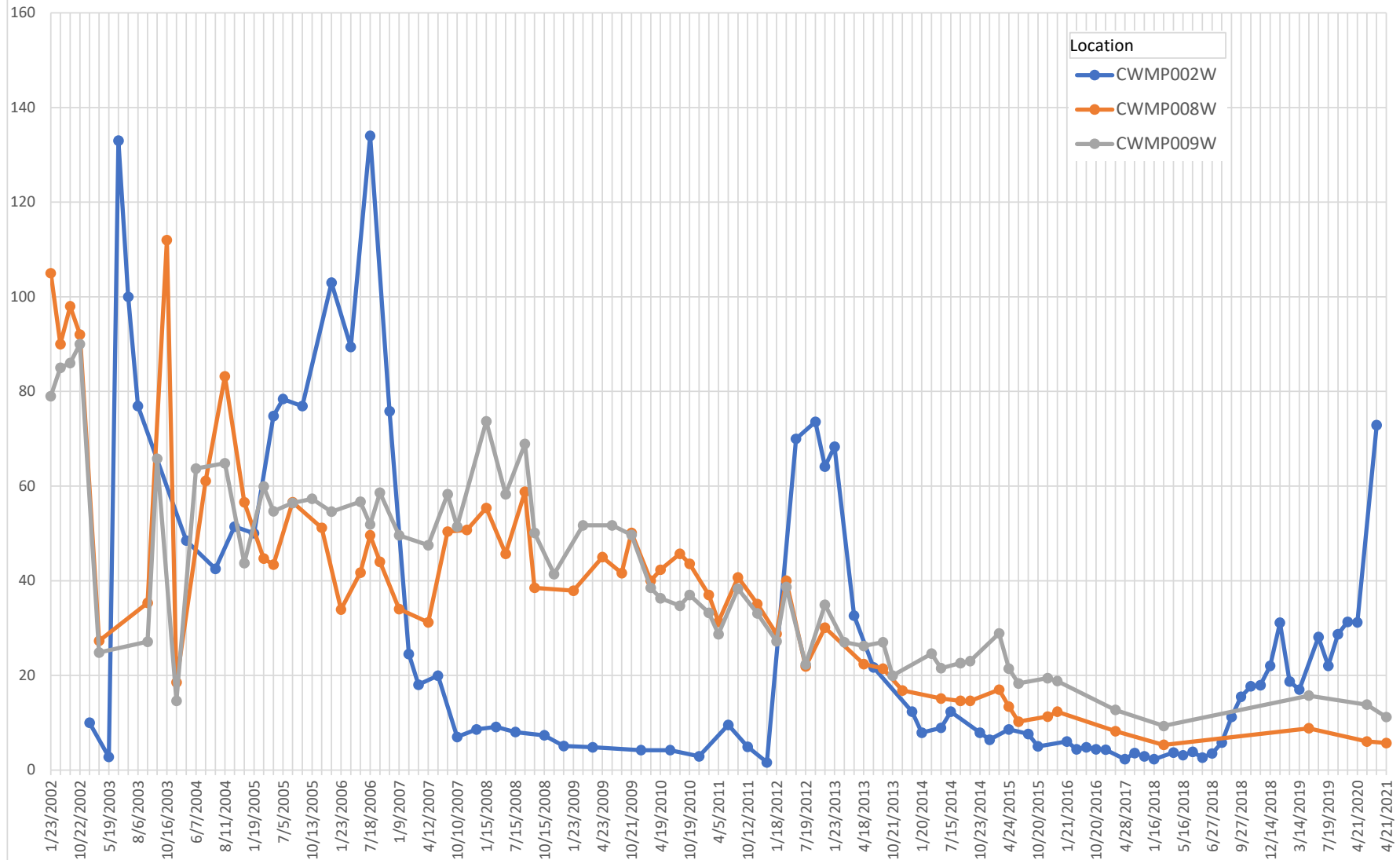


Sample Date

Flag Parameter

Max of Result

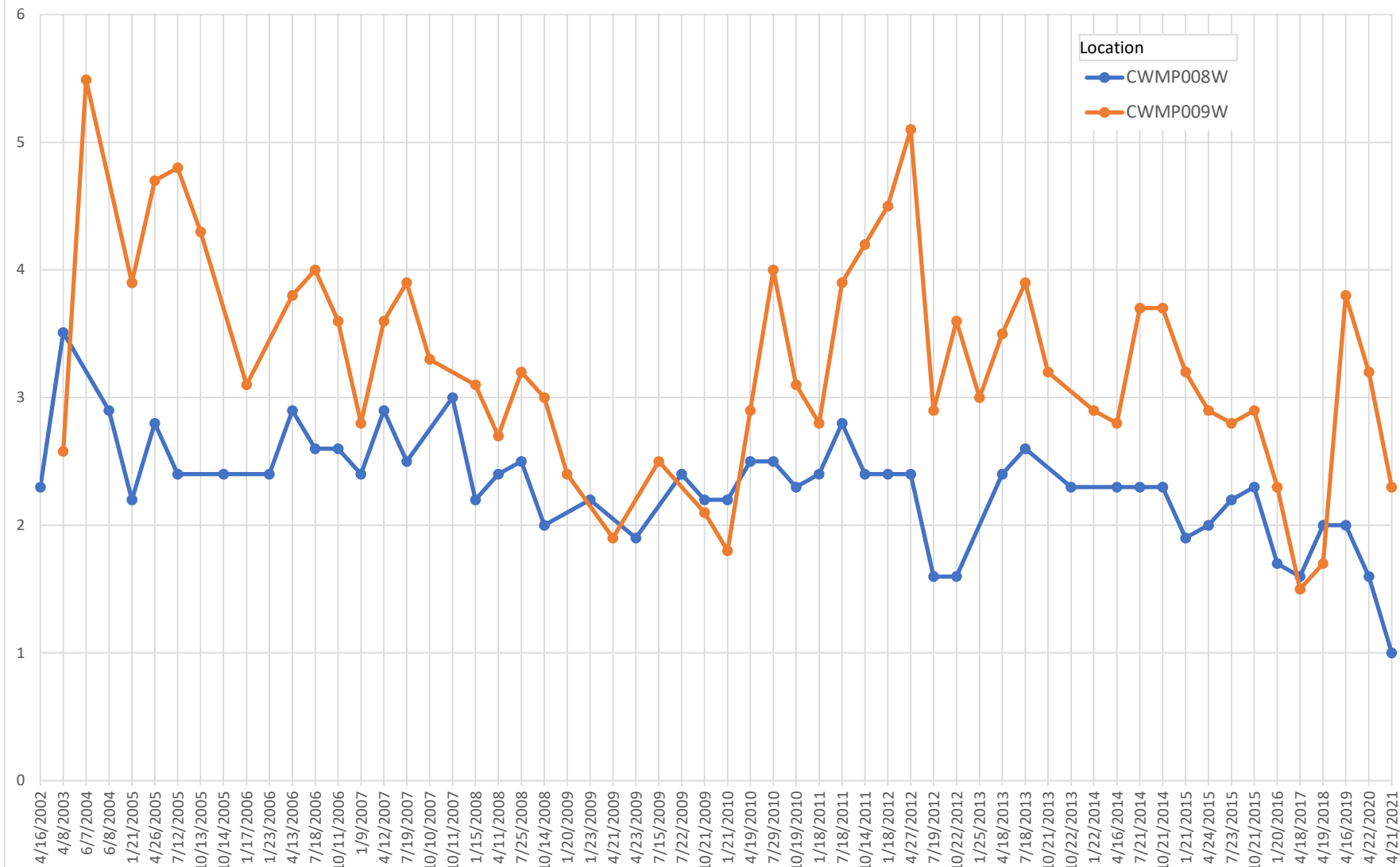
CHLOROETHANE



Flag Parameter

Max of Result

1,2-DICHLOROBENZENE

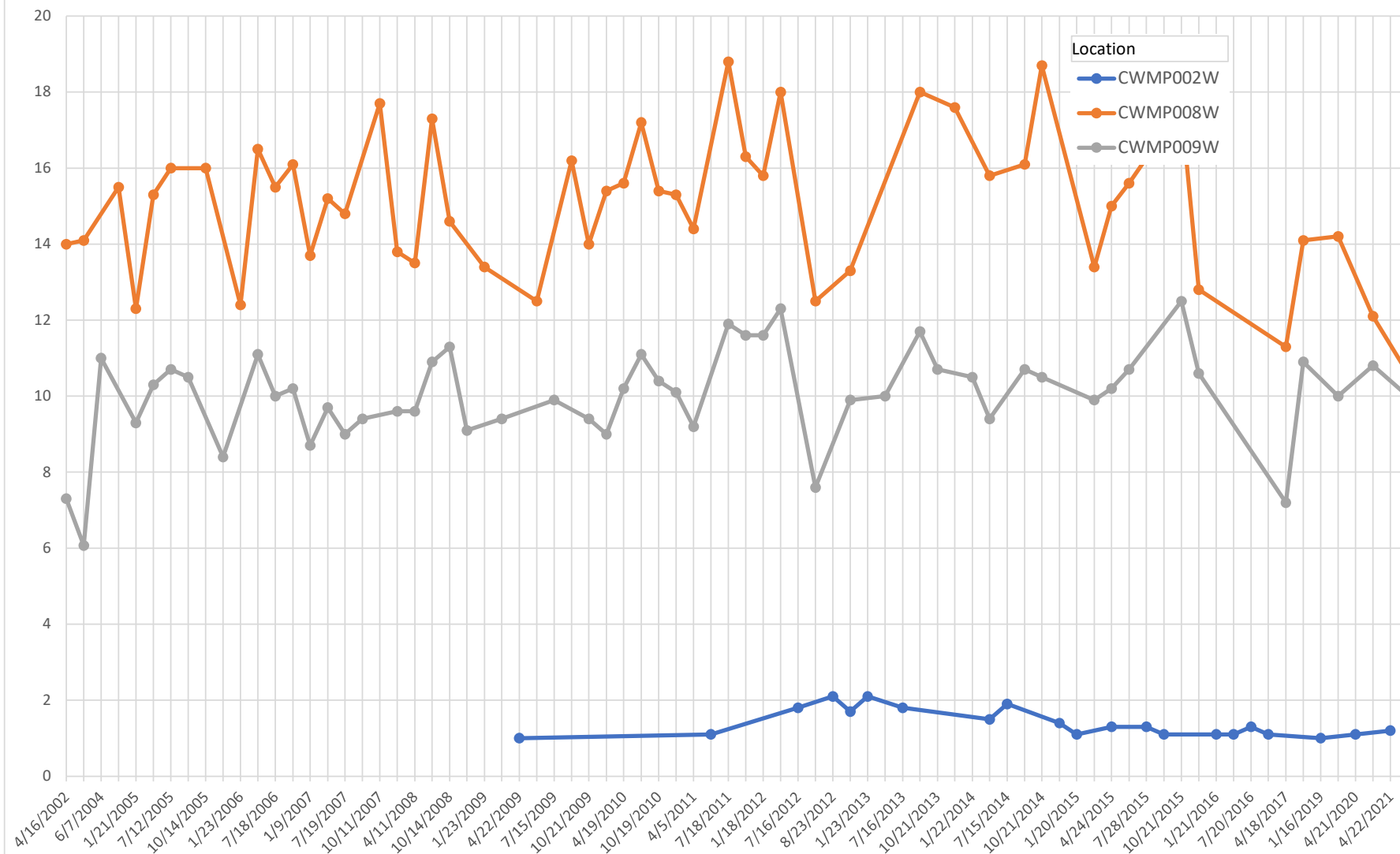


Sample Date

Flag Parameter

Max of Result

1,4-DICHLOROBENZENE



Sample Date

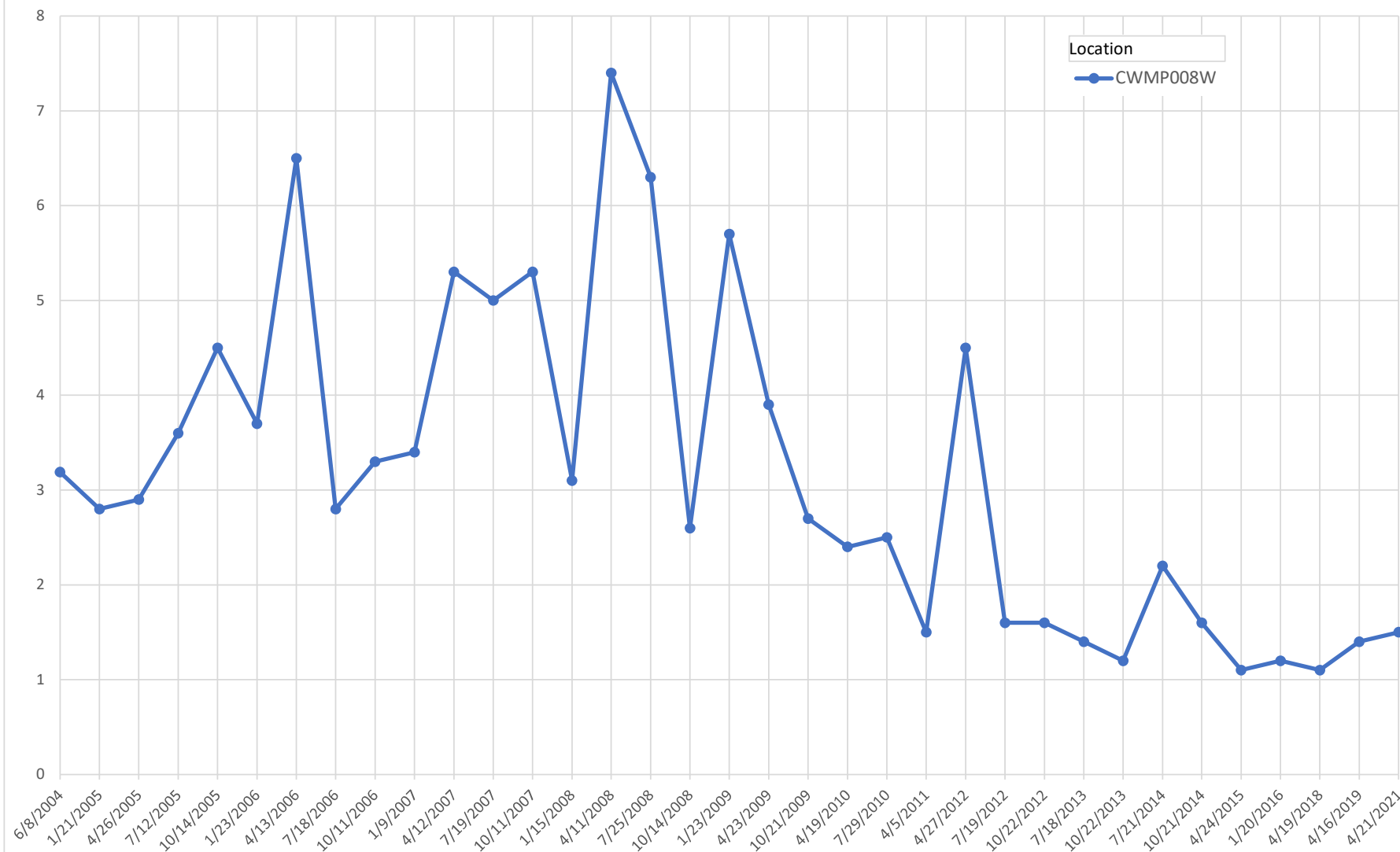
Flag Parameter

Max of Result

DICHLORODIFLUOROMETHANE

Location

CWMP008W



Sample Date



DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Comments:

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	18	SM20 2321
CALCIUM, TOTAL	17.5	SW846 6010C
CALCIUM, DISSOLVED	18	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	60	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	150	SW846 6010C
MAGNESIUM, TOTAL	9.4	SW846 6010C
MAGNESIUM, DISSOLVED	9.3	SW846 6010C
MANGANESE, TOTAL (ug/l)	6.4	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	7.7	SW846 6010C
NITRATE-NITROGEN	9.2	EPA 300
pH-FIELD (SU)	5.03	FIELD
pH-LAB (SU)	6.08	SM4500B
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED	2.2	6SW846 010C
SODIUM, TOTAL	31.5	SW846 6010C
SODIUM, DISSOLVED	31.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	388	FIELD
SPEC. COND., LAB (umhos/cm)	372	EPA 120.1
SULFATE	15.1	EPA 300
ALKALINITY	18	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	218	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	50	SW846 6010C
BARIUM, DISSOLVED	51	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	7.9	SW846 6010C
ZINC, DISSOLVED	6.7	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/19/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

MUNICIPAL WASTE LANDFILL QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP001W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

X	Upgradient/Upstream	Downgradient/Downstream
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11	1	1
12	1	1
13	1	1
14	1	1
15	1	1
16	1	1
17	1	1
18	1	1
19	1	1
20	1	1
21	1	1
22	1	1
23	1	1
24	1	1
25	1	1
26	1	1
27	1	1
28	1	1
29	1	1
30	1	1
31	1	1
32	1	1
33	1	1
34	1	1
35	1	1
36	1	1
37	1	1
38	1	1
39	1	1
40	1	1
41	1	1
42	1	1
43	1	1
44	1	1
45	1	1
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49	1	1
50	1	1
51	1	1
52	1	1
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56	1	1
57	1	1
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59	1	1
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61	1	1
62	1	1
63	1	1
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65	1	1
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74	1	1
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81	1	1
82	1	1
83	1	1
84	1	1
85	1	1
86	1	1
87	1	1
88	1	1
89	1	1
90	1	1
91	1	1
92	1	1
93	1	1
94	1	1
95	1	1
96	1	1
97	1	1
98	1	1
99	1	1
100	1	1

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 27.43 "

Longitude: 76° 26' 14.4"

Depth to Water Level: 27.31 ft

Measured from: Land Surface X TOC

Casing Stickup: 1.23 ft

Elevation of Water Level: 487.82 ft./MSL

Sampling Depth: 57 ft

Volume of Water Column: 57.26 gal

Total Well Depth: 66.3 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 1.8

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____gpm

Sample Date (mm/dd/yy): 4/19/2021

Sample Collection Time: 11:57

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3170526002 Final Lab Analysis CompletionDate: 5/12/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	7	SM20 2321
CALCIUM, TOTAL	14.3	SW846 6010C
CALCIUM, DISSOLVED	14.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	26.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	450	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	10	SW846 6010C
MAGNESIUM, DISSOLVED	10.1	SW846 6010C
MANGANESE, TOTAL (ug/l)	49	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	48	SW846 6010C
NITRATE-NITROGEN	18	EPA 300
pH-FIELD (SU)	5.22	FIELD
pH-LAB (SU)	5.9	SM4500B
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED	2.2	6SW846 010C
SODIUM, TOTAL	12.6	SW846 6010C
SODIUM, DISSOLVED	12.9	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	273	FIELD
SPEC. COND., LAB (umhos/cm)	263	EPA 120.1
SULFATE	3.9	EPA 300
ALKALINITY	7	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	166	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.56	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	16.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
 Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	78	SW846 6010C
BARIUM, DISSOLVED	80	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.4	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	19	SW846 6010C
ZINC, DISSOLVED	18	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/19/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6.6	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Comments:

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.159	ASTM D6919-09
BICARBONATE	17	SM20 2321
CALCIUM, TOTAL	14.6	SW846 6010C
CALCIUM, DISSOLVED	14.8	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	59.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	270	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	7.5	SW846 6010C
MAGNESIUM, DISSOLVED	7.6	SW846 6010C
MANGANESE, TOTAL (ug/l)	54	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	52	SW846 6010C
NITRATE-NITROGEN	7.5	EPA 300
pH-FIELD (SU)	5.1	FIELD
pH-LAB (SU)	6.16	SM4500B
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED	2.2	6SW846 010C
SODIUM, TOTAL	30.5	SW846 6010C
SODIUM, DISSOLVED	30.1	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	339	FIELD
SPEC. COND., LAB (umhos/cm)	329	EPA 120.1
SULFATE	4.9	EPA 300
ALKALINITY	17	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	168	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	6.87	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/19/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	49	SW846 6010C
BARIUM, DISSOLVED	48	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	3.4	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	10	SW846 6010C
ZINC, DISSOLVED	10	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/19/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/19/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6.1	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP017S ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 20.41 " Longitude: 76 ° 26 ' 45.1 "

Depth to Water Level: _____ ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: _____ ft Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft Volume of Water Column: #Error gal

Total Well Depth: _____ ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/21/2021 Sample Collection Time: 10:19

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154001 Final Lab Analysis Completion Date: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.149	ASTM D6919-09
BICARBONATE	651	SM20 2321
CALCIUM, TOTAL	53.4	SW846 6010C
CALCIUM, DISSOLVED	53.2	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	18	EPA 410.4
CHLORIDE	639	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	410	SW846 6010C
IRON, DISSOLVED (ug/l)	240	SW846 6010C
MAGNESIUM, TOTAL	102	SW846 6010C
MAGNESIUM, DISSOLVED	94.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	40	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	37	SW846 6010C
NITRATE-NITROGEN	25.4	EPA 300
pH-FIELD (SU)	8.07	FIELD
pH-LAB (SU)	8.32	SM4500B
POTASSIUM, TOTAL	12.9	SW846 6010C
POTASSIUM, DISSOLVED	12.1	6SW846 010C
SODIUM, TOTAL	4160	SW846 6010C
SODIUM, DISSOLVED	405	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	4339	FIELD
SPEC. COND., LAB (umhos/cm)	2870	EPA 120.1
SULFATE	79.7	EPA 300
ALKALINITY	651	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1640	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	4.4	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.04	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	28	SW846 6010C
BARIUM, DISSOLVED	29	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	23	SW846 6010C
COPPER, DISSOLVED	19	SW846 6010C
LEAD-FLAMELESS, TOTAL	110	SW846 6010C
LEAD, DISSOLVED	3.5	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	94	SW846 6010C
ZINC, DISSOLVED	90	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	9.8	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP018S ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor

Sampling Point: Latitude: 39 ° 56 ' 55.11 " Longitude: 76 ° 26 ' 51.66 "

Depth to Water Level: _____ ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: _____ ft Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft Volume of Water Column: #Error gal

Total Well Depth: _____ ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/21/2021 Sample Collection Time: 10:41

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154002 Final Lab Analysis Completion Date: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.222	ASTM D6919-09
BICARBONATE	328	SM20 2321
CALCIUM, TOTAL	58.6	SW846 6010C
CALCIUM, DISSOLVED	57.7	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	27	EPA 410.4
CHLORIDE	439	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	120	SW846 6010C
IRON, DISSOLVED (ug/l)	78	SW846 6010C
MAGNESIUM, TOTAL	65.3	SW846 6010C
MAGNESIUM, DISSOLVED	59.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	8.4	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	18.6	EPA 300
pH-FIELD (SU)	8.61	FIELD
pH-LAB (SU)	8.55	SM4500B
POTASSIUM, TOTAL	18.3	SW846 6010C
POTASSIUM, DISSOLVED	17.2	6SW846 010C
SODIUM, TOTAL	2680	SW846 6010C
SODIUM, DISSOLVED	269	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	2852	FIELD
SPEC. COND., LAB (umhos/cm)	2000	EPA 120.1
SULFATE	33.6	EPA 300
ALKALINITY	349	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1130	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	7.6	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.98	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	44	SW846 6010C
BARIUM, DISSOLVED	42	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	11	SW846 6010C
COPPER, DISSOLVED	9.9	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	24	SW846 6010C
ZINC, DISSOLVED	25	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	14	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

MUNICIPAL WASTE LANDFILL

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP016W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 56 ' 55.57 "

Longitude: 76 ° 26 ' 50.59 '

Depth to Water Level: ft

Measured from: Land Surface X TOC

Casing Stickup: 2.53 ft

Elevation of Water Level: #Error ft./MSL

Sampling Depth: 71 ft

Volume of Water Column: #Error gal

Total Well Depth: 78.03 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/21/2021

Sample Collection Time: 11:19

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154003 Final Lab Analysis CompletionDate: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.171	ASTM D6919-09
BICARBONATE	8	SM20 2321
CALCIUM, TOTAL	5.7	SW846 6010C
CALCIUM, DISSOLVED	5.7	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	3.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	230	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	1.7	SW846 6010C
MAGNESIUM, DISSOLVED	1.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	9.3	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	7.7	SW846 6010C
NITRATE-NITROGEN	2.9	EPA 300
pH-FIELD (SU)	5.24	FIELD
pH-LAB (SU)	6.45	SM4500B
POTASSIUM, TOTAL	0.51	SW846 6010C
POTASSIUM, DISSOLVED	0.46	6SW846 010C
SODIUM, TOTAL	3.4	SW846 6010C
SODIUM, DISSOLVED	3.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	100	FIELD
SPEC. COND., LAB (umhos/cm)	72	EPA 120.1
SULFATE	9.7	EPA 300
ALKALINITY	8	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	74	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.61	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.46	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	11	SW846 6010C
BARIUM, DISSOLVED	11	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.5	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	7.4	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

MUNICIPAL WASTE LANDFILL QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP010W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 2.38 "

Longitude: 76° 26' 57.92"

Depth to Water Level: 8.55 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.10 ft

Elevation of Water Level: 352.35 ft./MSL

Sampling Depth: 17 ft

Volume of Water Column: 7.21 gal

Total Well Depth: 19.6 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/21/2021

Sample Collection Time: 11:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154004 Final Lab Analysis CompletionDate: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.157	ASTM D6919-09
BICARBONATE	161	SM20 2321
CALCIUM, TOTAL	22.9	SW846 6010C
CALCIUM, DISSOLVED	22.7	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	103	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	220	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	21.7	SW846 6010C
MAGNESIUM, DISSOLVED	20.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	100	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	9.3	SW846 6010C
NITRATE-NITROGEN	6.1	EPA 300
pH-FIELD (SU)	6.75	FIELD
pH-LAB (SU)	7.31	SM4500B
POTASSIUM, TOTAL	4.3	SW846 6010C
POTASSIUM, DISSOLVED	4.4	6SW846 010C
SODIUM, TOTAL	75.1	SW846 6010C
SODIUM, DISSOLVED	70.9	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1060	FIELD
SPEC. COND., LAB (umhos/cm)	665	EPA 120.1
SULFATE	23.8	EPA 300
ALKALINITY	161	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	374	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	2.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.9	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	26	SW846 6010C
BARIUM, DISSOLVED	24	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	5.7	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	7.1	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	17	SW846 6010C
LEAD, DISSOLVED	3.3	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	18	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

MUNICIPAL WASTE LANDFILL QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP009W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 10.82 "

Longitude: 76° 26' 55.8"

Depth to Water Level: 9.03 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.70 ft

Elevation of Water Level: 395.17 ft./MSL

Sampling Depth: 16 ft

Volume of Water Column: 6.96 gal

Total Well Depth: 19.7 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 4.1

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____gpm

Sample Date (mm/dd/yy): 4/21/2021

Sample Collection Time: 12:19

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154005 Final Lab Analysis CompletionDate: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	29.4	ASTM D6919-09
BICARBONATE	558	SM20 2321
CALCIUM, TOTAL	142	SW846 6010C
CALCIUM, DISSOLVED	147	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	121	EPA 410.4
CHLORIDE	560	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	37100	SW846 6010C
IRON, DISSOLVED (ug/l)	32800	SW846 6010C
MAGNESIUM, TOTAL	78	SW846 6010C
MAGNESIUM, DISSOLVED	74.2	SW846 6010C
MANGANESE, TOTAL (ug/l)	11600	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	10800	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.2	FIELD
pH-LAB (SU)	6.51	SM4500B
POTASSIUM, TOTAL	32.8	SW846 6010C
POTASSIUM, DISSOLVED	32.1	6SW846 010C
SODIUM, TOTAL	189	SW846 6010C
SODIUM, DISSOLVED	169	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	4035	FIELD
SPEC. COND., LAB (umhos/cm)	2720	EPA 120.1
SULFATE	6.1	EPA 300
ALKALINITY	558	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1510	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	35.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	58.6	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	2.1	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.4	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.9	SW846 6010C
ARSENIC, DISSOLVED	3.6	SW846 6010C
BARIUM, TOTAL	750	SW846 6010C
BARIUM, DISSOLVED	800	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	15	SW846 6010C
LEAD, DISSOLVED	4	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	21.8	SW846 8260B
CHLOROETHANE	11.2	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	2.3	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	10	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	56	SW846 6010C
NICKEL	74	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

MUNICIPAL WASTE LANDFILL

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP008W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 16.97 "

Longitude: 76° 26' 47.58"

Depth to Water Level: 2.62 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.80 ft

Elevation of Water Level: 419.68 ft./MSL

Sampling Depth: 19 ft

Volume of Water Column: 3.29 gal

Total Well Depth: 22.8 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 6.4

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/21/2021

Sample Collection Time: 12:56

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171154006 Final Lab Analysis CompletionDate: 5/17/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	5.61	ASTM D6919-09
BICARBONATE	417	SM20 2321
CALCIUM, TOTAL	60.6	SW846 6010C
CALCIUM, DISSOLVED	57.3	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	44	EPA 410.4
CHLORIDE	30.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	24300	SW846 6010C
IRON, DISSOLVED (ug/l)	21900	SW846 6010C
MAGNESIUM, TOTAL	28.1	SW846 6010C
MAGNESIUM, DISSOLVED	26.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	15500	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	13600	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.22	FIELD
pH-LAB (SU)	6.53	SM4500B
POTASSIUM, TOTAL	7.7	SW846 6010C
POTASSIUM, DISSOLVED	7.4	6SW846 010C
SODIUM, TOTAL	32.3	SW846 6010C
SODIUM, DISSOLVED	29.6	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1149	FIELD
SPEC. COND., LAB (umhos/cm)	760	EPA 120.1
SULFATE	7	EPA 300
ALKALINITY	417	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	398	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	25.7	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/21/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1.6	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.5	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	130	SW846 6010C
BARIUM, DISSOLVED	120	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	31	SW846 6010C
LEAD, DISSOLVED	2.6	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	8.1	SW846 8260B
CHLOROETHANE	5.7	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	10.6	SW846 8260B
DICHLORODIFLUOROMETHANE	1.5	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/21/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	31	SW846 6010C
NICKEL	19	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

FORM 19

**MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP012W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 1.48 "

Longitude: 76° 26' 36.02"

Depth to Water Level: _____ ft

Measured from: Land Surface X TOC

Casing Stickup: 1.90 ft

Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft

Volume of Water Column:	#Error	gal
-------------------------	--------	-----

Total Well Depth: 101.9 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged:

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____gpm

Sample Date (mm/dd/yy): 4/22/2021

Sample Collection Time: 9:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171495001 Final Lab Analysis CompletionDate: 5/12/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.126	ASTM D6919-09
BICARBONATE	75	SM20 2321
CALCIUM, TOTAL	29.9	SW846 6010C
CALCIUM, DISSOLVED	30.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	36	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	82500	SW846 6010C
IRON, DISSOLVED (ug/l)	200	SW846 6010C
MAGNESIUM, TOTAL	8.5	SW846 6010C
MAGNESIUM, DISSOLVED	8.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	270	SW846 6010C
NITRATE-NITROGEN	7.8	EPA 300
pH-FIELD (SU)	5.34	FIELD
pH-LAB (SU)	7.31	SM4500B
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED	1.5	6SW846 010C
SODIUM, TOTAL	13	SW846 6010C
SODIUM, DISSOLVED	13.9	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	337	FIELD
SPEC. COND., LAB (umhos/cm)	324	EPA 120.1
SULFATE	5.3	EPA 300
ALKALINITY	75	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	226	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	2.5	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	287	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	4.4	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	92	SW846 6010C
BARIUM, DISSOLVED	70	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	8.7	SW846 6010C
ZINC, DISSOLVED	5.9	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/22/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	10	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP002W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.97 "

Longitude: 76 ° 26 ' 12.3 "

Depth to Water Level: 60.27 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.19 ft

Elevation of Water Level: 465.54 ft./MSL

Sampling Depth: 85 ft

Volume of Water Column: 58.35 gal

Total Well Depth: 100 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/22/2021

Sample Collection Time: 11:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171495002

Final Lab Analysis Completion Date: 5/13/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.116	ASTM D6919-09
BICARBONATE	106	SM20 2321
CALCIUM, TOTAL	46.1	SW846 6010C
CALCIUM, DISSOLVED	45.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	102	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	490	SW846 6010C
IRON, DISSOLVED (ug/l)	200	SW846 6010C
MAGNESIUM, TOTAL	14.9	SW846 6010C
MAGNESIUM, DISSOLVED	15.3	SW846 6010C
MANGANESE, TOTAL (ug/l)	940	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	900	SW846 6010C
NITRATE-NITROGEN	4.4	EPA 300
pH-FIELD (SU)	5.18	FIELD
pH-LAB (SU)	6.7	SM4500B
POTASSIUM, TOTAL	2.6	SW846 6010C
POTASSIUM, DISSOLVED	2.7	6SW846 010C
SODIUM, TOTAL	27.4	SW846 6010C
SODIUM, DISSOLVED	27.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	544	FIELD
SPEC. COND., LAB (umhos/cm)	583	EPA 120.1
SULFATE	21.9	EPA 300
ALKALINITY	106	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	354	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	4.3	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.17	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	11.5	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	45	SW846 6010C
BARIUM, DISSOLVED	45	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	3.9	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	7.9	SW846 6010C
ZINC, DISSOLVED	7.8	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1.3	SW846 8260B
CHLOROETHANE	72.9	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1.2	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/22/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	22	SW846 6010C
NICKEL	27	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP003W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 20.17 "

Longitude: 76 ° 26 ' 8.37 "

Depth to Water Level: 98.64 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.29 ft

Elevation of Water Level: 425.57 ft./MSL

Sampling Depth: 100 ft

Volume of Water Column: -34.72 gal

Total Well Depth: 75 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/22/2021

Sample Collection Time: 11:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171495003 Final Lab Analysis Completion Date: 5/12/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.22	ASTM D6919-09
BICARBONATE	22	SM20 2321
CALCIUM, TOTAL	20.1	SW846 6010C
CALCIUM, DISSOLVED	20.4	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	59.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	79	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	7.4	SW846 6010C
MAGNESIUM, DISSOLVED	7.7	SW846 6010C
MANGANESE, TOTAL (ug/l)	6.6	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	7.3	EPA 300
pH-FIELD (SU)	5.14	FIELD
pH-LAB (SU)	6.83	SM4500B
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED	1.5	6SW846 010C
SODIUM, TOTAL	18.1	SW846 6010C
SODIUM, DISSOLVED	18.5	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	306	FIELD
SPEC. COND., LAB (umhos/cm)	320	EPA 120.1
SULFATE	4.8	EPA 300
ALKALINITY	22	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	236	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.63	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.22	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.5	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	17	SW846 6010C
BARIUM, DISSOLVED	17	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.7	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/22/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	8.2	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
06/21/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP004W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 17.9 " Longitude: 76 ° 26 ' 7.05 "

Depth to Water Level: 101.29 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 428.24 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 56.85 gal

Total Well Depth: 140 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/22/2021 Sample Collection Time: 11:45

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3171495004 Final Lab Analysis Completion Date: 5/12/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.151	ASTM D6919-09
BICARBONATE	31	SM20 2321
CALCIUM, TOTAL	18.1	SW846 6010C
CALCIUM, DISSOLVED	18.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	44.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	6.2	SW846 6010C
MAGNESIUM, DISSOLVED	6.3	SW846 6010C
MANGANESE, TOTAL (ug/l)	8	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	7.9	SW846 6010C
NITRATE-NITROGEN	5.7	EPA 300
pH-FIELD (SU)	5.46	FIELD
pH-LAB (SU)	6.82	SM4500B
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED	1.2	6SW846 010C
SODIUM, TOTAL	14.8	SW846 6010C
SODIUM, DISSOLVED	14.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	252	FIELD
SPEC. COND., LAB (umhos/cm)	268	EPA 120.1
SULFATE	5.6	EPA 300
ALKALINITY	31	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	202	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.74	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/22/2021

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	22	SW846 6010C
BARIUM, DISSOLVED	22	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-A. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/22/2021

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

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ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

^T Please indicate detection limit if analyte is not detected.

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

May 12, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3170526
Purchase Order:	PO-1000246	Workorder ID:	2ND QTR 2021 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, April 19, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

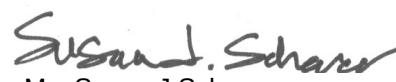
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3170526001	CWMP007W	Ground Water	4/19/2021 10:38	4/19/2021 16:51	Mr. Brian G Shade
3170526002	CWMP001W	Ground Water	4/19/2021 11:57	4/19/2021 16:51	Mr. Brian G Shade
3170526003	CWMP005W	Ground Water	4/19/2021 13:28	4/19/2021 16:51	Mr. Brian G Shade
3170526004	Field Blank	Water	4/19/2021 14:30	4/19/2021 16:51	Mr. Brian G Shade
3170526005	Trip Blank	Water	4/19/2021 16:51	4/19/2021 16:51	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526001**
Sample ID: **CWMP007W**

Date Collected: 4/19/2021 10:38 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:13	VLM	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:13	VLM	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:13	VLM	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:13	VLM	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:13	VLM	J

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526001**
Sample ID: **CWMP007W**

Date Collected: 4/19/2021 10:38 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/22/21 04:13	VLM	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:13	VLM	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:13	VLM	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	95.2	C	%	62 - 133	SW846 8260B			4/22/21 04:13	VLM	J
4-Bromofluorobenzene (S)	94.9	C	%	79 - 114	SW846 8260B			4/22/21 04:13	VLM	J
Dibromofluoromethane (S)	83.6	C	%	78 - 116	SW846 8260B			4/22/21 04:13	VLM	J
Toluene-d8 (S)	87.1	C	%	76 - 127	SW846 8260B			4/22/21 04:13	VLM	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/22/21 04:13	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	18	C	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	B
Alkalinity, Total	18	C,1	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	A
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			5/1/21 11:28	MAP	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/21/21 17:05	ALK	C
Chloride	60.0	C	mg/L	2.0	EPA 300.0			4/20/21 05:47	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/20/21 05:47	MBW	B
Nitrate-N	9.2	C	mg/L	0.20	EPA 300.0			4/20/21 05:47	MBW	B
pH	6.08	C,2	pH_Units		S4500HB-11			4/23/21 23:59	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/26/21 17:00	VXF	4/27/21 09:03	MXF	I
Specific Conductance	372	C,3	umhos/cm	1	SM2510B-2011			4/23/21 23:59	MBS	B
Sulfate	15.1	C	mg/L	2.0	EPA 300.0			4/20/21 05:47	MBW	B
Total Dissolved Solids	218	C	mg/L	25	S2540C-11			4/22/21 13:13	KXH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SM5310B-2011			4/29/21 20:58	PAG	G
Turbidity	ND	C	NTU	0.10	SM2130B-2011			4/20/21 09:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526001**
Sample ID: **CWMP007W**

Date Collected: 4/19/2021 10:38 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Barium, Total	0.050	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Barium, Dissolved	0.051	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Calcium, Total	17.5	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Calcium, Dissolved	18.0	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:19	MSA	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Iron, Total	ND	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Iron, Dissolved	0.15	C	mg/L	0.056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Magnesium, Total	9.4	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Magnesium, Dissolved	9.3	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Manganese, Total	0.0064	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Manganese, Dissolved	0.0077	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Mercury, Total	ND	C,4, 5	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/27/21 06:51	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:45	EAD	D
Nickel, Total	0.0060	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Potassium, Total	2.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Potassium, Dissolved	2.2	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:19	MSA	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Sodium, Total	31.5	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Sodium, Dissolved	31.8	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526001**
Sample ID: **CWMP007W**

Date Collected: 4/19/2021 10:38 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Total	0.0079	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:31	MO	E1
Zinc, Dissolved	0.0067	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:27	MSA	D
FIELD PARAMETERS										
Depth to Water Level	5.17	C	Feet		Field			4/19/21 10:38	BGS	F
Elev Top MW Casing above MSL	453.40	C	Feet		Field			4/19/21 10:38	BGS	F
Flow Rate	1.73	C	gal/min		Field			4/19/21 10:38	BGS	F
Ground Water Elevation	448.23	C	ft/MSL		Field			4/19/21 10:38	BGS	F
pH, Field (SM4500B)	5.03	C	pH_Units		Field			4/19/21 10:38	BGS	F
Sample Depth	33.00	C	Feet		Field			4/19/21 10:38	BGS	F
Specific Conductance, Field	388	C	umhos/cm	1	Field			4/19/21 10:38	BGS	F
Temperature	12.73	C	Deg. C		Field			4/19/21 10:38	BGS	F
Total Well Depth	36.50	C	Feet		Field			4/19/21 10:38	BGS	F
Volume in Water Column	46.06	C	Gallons		Field			4/19/21 10:38	BGS	F
Water Level After Purge	5.88	C	Feet		Field			4/19/21 10:38	BGS	F
Well Volumes Purged	2.63	C	Vol		Field			4/19/21 10:38	BGS	F


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526002**
Sample ID: **CWMP001W**

Date Collected: 4/19/2021 11:57 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:36	VLM	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:36	VLM	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:36	VLM	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
3-Chloro-1-propene	ND	C,4	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1-Dichloroethane	ND	C,5	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:36	VLM	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:36	VLM	J

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526002**
Sample ID: **CWMP001W**

Date Collected: 4/19/2021 11:57 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/22/21 04:36	VLM	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:36	VLM	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:36	VLM	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.3	C	%	62 - 133	SW846 8260B			4/22/21 04:36	VLM	J
4-Bromofluorobenzene (S)	99.6	C	%	79 - 114	SW846 8260B			4/22/21 04:36	VLM	J
Dibromofluoromethane (S)	86.1	C	%	78 - 116	SW846 8260B			4/22/21 04:36	VLM	J
Toluene-d8 (S)	90.7	C	%	76 - 127	SW846 8260B			4/22/21 04:36	VLM	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/22/21 04:36	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	7	C	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	B
Alkalinity, Total	7	C,1	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	A
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			5/1/21 11:41	MAP	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/21/21 17:05	ALK	C
Chloride	26.6	C	mg/L	2.0	EPA 300.0			4/20/21 06:01	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/20/21 06:01	MBW	B
Nitrate-N	18.0	C	mg/L	0.20	EPA 300.0			4/20/21 06:01	MBW	B
pH	5.90	C,2	pH_Units		S4500HB-11			4/23/21 23:59	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/26/21 17:00	VXF	4/27/21 09:03	MXF	I
Specific Conductance	263	C,3	umhos/cm	1	SM2510B-2011			4/23/21 23:59	MBS	B
Sulfate	3.9	C	mg/L	2.0	EPA 300.0			4/20/21 06:01	MBW	B
Total Dissolved Solids	166	C	mg/L	25	S2540C-11			4/22/21 13:42	KXH	B
Total Organic Carbon (TOC)	0.56	C	mg/L	0.50	SM5310B-2011			4/29/21 20:58	PAG	G
Turbidity	16.5	C	NTU	0.10	SM2130B-2011			4/20/21 09:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526002**
Sample ID: **CWMP001W**

Date Collected: 4/19/2021 11:57 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Barium, Total	0.078	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Barium, Dissolved	0.080	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Calcium, Total	14.3	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Calcium, Dissolved	14.5	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:22	MSA	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Iron, Total	0.45	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Lead, Total	0.0024	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Magnesium, Total	10.0	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Magnesium, Dissolved	10.1	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Manganese, Total	0.049	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Manganese, Dissolved	0.048	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/27/21 06:55	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/23/21 06:33	EAD	4/23/21 10:59	EAD	D
Nickel, Total	0.0066	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Potassium, Total	2.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Potassium, Dissolved	2.2	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:22	MSA	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Sodium, Total	12.6	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Sodium, Dissolved	12.9	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1
Zinc, Total	0.019	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:42	MO	E1

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526002**
Sample ID: **CWMP001W**

Date Collected: 4/19/2021 11:57 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.018	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:30	MSA	D
FIELD PARAMETERS										
Depth to Water Level	27.31	C	Feet		Field			4/19/21 11:57	BGS	F
Elev Top MW Casing above MSL	515.13	C	Feet		Field			4/19/21 11:57	BGS	F
Flow Rate	1.67	C	gal/min		Field			4/19/21 11:57	BGS	F
Ground Water Elevation	487.82	C	ft/MSL		Field			4/19/21 11:57	BGS	F
pH, Field (SM4500B)	5.22	C	pH_Units		Field			4/19/21 11:57	BGS	F
Sample Depth	57.00	C	Feet		Field			4/19/21 11:57	BGS	F
Specific Conductance, Field	273	C	umhos/cm	1	Field			4/19/21 11:57	BGS	F
Temperature	13.77	C	Deg. C		Field			4/19/21 11:57	BGS	F
Total Well Depth	66.30	C	Feet		Field			4/19/21 11:57	BGS	F
Volume in Water Column	57.32	C	Gallons		Field			4/19/21 11:57	BGS	F
Water Level After Purge	47.98	C	Feet		Field			4/19/21 11:57	BGS	F
Well Volumes Purged	1.75	C	Vol		Field			4/19/21 11:57	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526003**
Sample ID: **CWMP005W**

Date Collected: 4/19/2021 13:28 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:58	VLM	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:58	VLM	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 04:58	VLM	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:58	VLM	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:58	VLM	J

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526003**
Sample ID: **CWMP005W**

Date Collected: 4/19/2021 13:28 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/22/21 04:58	VLM	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/22/21 04:58	VLM	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 04:58	VLM	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96.8	C	%	62 - 133	SW846 8260B			4/22/21 04:58	VLM	J
4-Bromofluorobenzene (S)	90.7	C	%	79 - 114	SW846 8260B			4/22/21 04:58	VLM	J
Dibromofluoromethane (S)	85.8	C	%	78 - 116	SW846 8260B			4/22/21 04:58	VLM	J
Toluene-d8 (S)	89.4	C	%	76 - 127	SW846 8260B			4/22/21 04:58	VLM	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/22/21 04:58	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	17	C	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	B
Alkalinity, Total	17	C,1	mg/L	5	SM2320B-2011			4/23/21 23:59	MBS	A
Ammonia-N	0.159	C	mg/L	0.100	ASTM D6919-09			5/1/21 11:55	MAP	C
Chemical Oxygen Demand (COD)	ND	C,4	mg/L	15	EPA 410.4			4/21/21 17:05	ALK	C
Chloride	59.5	C	mg/L	2.0	EPA 300.0			4/20/21 06:28	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/20/21 06:28	MBW	B
Nitrate-N	7.5	C	mg/L	0.20	EPA 300.0			4/20/21 06:28	MBW	B
pH	6.16	C,2	pH_Units		S4500HB-11			4/23/21 23:59	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/26/21 17:00	VXF	4/27/21 09:03	MXF	I
Specific Conductance	329	C,3	umhos/cm	1	SM2510B-2011			4/23/21 23:59	MBS	B
Sulfate	4.9	C	mg/L	2.0	EPA 300.0			4/20/21 06:28	MBW	B
Total Dissolved Solids	168	C	mg/L	25	S2540C-11			4/22/21 13:42	KXH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SM5310B-2011			4/29/21 20:58	PAG	G
Turbidity	6.87	C	NTU	0.10	SM2130B-2011			4/20/21 09:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526003**
Sample ID: **CWMP005W**

Date Collected: 4/19/2021 13:28 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Barium, Total	0.049	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Barium, Dissolved	0.048	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Calcium, Total	14.6	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Calcium, Dissolved	14.8	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:26	MSA	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Iron, Total	0.27	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Lead, Total	0.0034	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Magnesium, Total	7.5	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Magnesium, Dissolved	7.6	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Manganese, Total	0.054	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Manganese, Dissolved	0.052	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/27/21 06:56	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/23/21 06:33	EAD	4/23/21 11:00	EAD	D
Nickel, Total	0.0061	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Potassium, Total	2.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Potassium, Dissolved	2.2	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/25/21 02:26	MSA	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Sodium, Total	30.5	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Sodium, Dissolved	30.1	C	mg/L	0.11	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1
Zinc, Total	0.010	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 13:45	MO	E1

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526003**
Sample ID: **CWMP005W**

Date Collected: 4/19/2021 13:28 Matrix: Ground Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.010	C	mg/L	0.0056	SW846 6020A	4/20/21 17:35	SXC	4/24/21 21:34	MSA	D
FIELD PARAMETERS										
Depth to Water Level	31.75	C	Feet		Field			4/19/21 13:28	BGS	F
Elev Top MW Casing above MSL	513.43	C	Feet		Field			4/19/21 13:28	BGS	F
Flow Rate	4.00	C	gal/min		Field			4/19/21 13:28	BGS	F
Ground Water Elevation	481.68	C	ft/MSL		Field			4/19/21 13:28	BGS	F
pH, Field (SM4500B)	5.10	C	pH_Units		Field			4/19/21 13:28	BGS	F
Sample Depth	130.00	C	Feet		Field			4/19/21 13:28	BGS	F
Specific Conductance, Field	339	C	umhos/cm	1	Field			4/19/21 13:28	BGS	F
Temperature	13.11	C	Deg. C		Field			4/19/21 13:28	BGS	F
Total Well Depth	138.92	C	Feet		Field			4/19/21 13:28	BGS	F
Volume in Water Column	157.54	C	Gallons		Field			4/19/21 13:28	BGS	F
Water Level After Purge	41.23	C	Feet		Field			4/19/21 13:28	BGS	F
Well Volumes Purged	1.78	C	Vol		Field			4/19/21 13:28	BGS	F



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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526004**
Sample ID: **Field Blank**

Date Collected: 4/19/2021 14:30 Matrix: Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 01:35	VLM	A
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/22/21 01:35	VLM	A
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 01:35	VLM	A
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/22/21 01:35	VLM	A
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/22/21 01:35	VLM	A

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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526004**

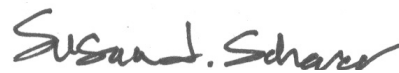
Date Collected: 4/19/2021 14:30

Matrix: Water

Sample ID: **Field Blank**

Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/22/21 01:35	VLM	A
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/22/21 01:35	VLM	A
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 01:35	VLM	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	95	C	%	62 - 133	SW846 8260B			4/22/21 01:35	VLM	A
4-Bromofluorobenzene (S)	98.6	C	%	79 - 114	SW846 8260B			4/22/21 01:35	VLM	A
Dibromofluoromethane (S)	86	C	%	78 - 116	SW846 8260B			4/22/21 01:35	VLM	A
Toluene-d8 (S)	89.9	C	%	76 - 127	SW846 8260B			4/22/21 01:35	VLM	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/22/21 01:35	CPK	A



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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526005**

Date Collected: 4/19/2021 16:51

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 00:27	VLM	A
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/22/21 00:27	VLM	A
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/22/21 00:27	VLM	A
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/22/21 00:27	VLM	A
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/22/21 00:27	VLM	A

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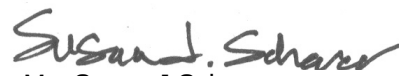
ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3170526005**
Sample ID: **Trip Blank**

Date Collected: 4/19/2021 16:51 Matrix: Water
Date Received: 4/19/2021 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/22/21 00:27	VLM	A
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/22/21 00:27	VLM	A
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/22/21 00:27	VLM	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	93.5	C	%	62 - 133	SW846 8260B			4/22/21 00:27	VLM	A
4-Bromofluorobenzene (S)	98.2	C	%	79 - 114	SW846 8260B			4/22/21 00:27	VLM	A
Dibromofluoromethane (S)	83.7	C	%	78 - 116	SW846 8260B			4/22/21 00:27	VLM	A
Toluene-d8 (S)	88.1	C	%	76 - 127	SW846 8260B			4/22/21 00:27	VLM	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/22/21 00:27	CPK	A


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ANALYTICAL RESULTS

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3170526001	1	CWMP007W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3170526001	2	CWMP007W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3170526001	3	CWMP007W	SM2510B-2011	Specific Conductance
The Method Blank for method SM2510B-2011 reported a value greater than the reporting level for the analyte Specific Conductance. The concentration was 3.03 uhmos/cm.				
3170526001	4	CWMP007W	SW846 7470A	Mercury, Total
The QC sample type MSD for method SW846 7470A was outside the control limits for the analyte Mercury, Total. The % Recovery was reported as 184 and the control limits were 70 to 130.				
3170526001	5	CWMP007W	SW846 7470A	Mercury, Total
The QC sample type MSD for method SW846 7470A was outside the control limits for the analyte Mercury, Total. The RPD was reported as 53.8 and the upper control limit is 20.				
3170526002	1	CWMP001W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3170526002	2	CWMP001W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3170526002	3	CWMP001W	SM2510B-2011	Specific Conductance
The Method Blank for method SM2510B-2011 reported a value greater than the reporting level for the analyte Specific Conductance. The concentration was 3.03 uhmos/cm.				
3170526002	4	CWMP001W	SW846 8260B	3-Chloro-1-propene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 3-Chloro-1-propene. The RPD was reported as 19.8 and the upper control limit is 18.				
3170526002	5	CWMP001W	SW846 8260B	1,1-Dichloroethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethane. The RPD was reported as 19.4 and the upper control limit is 15.				
3170526003	1	CWMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3170526003	2	CWMP005W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3170526003	3	CWMP005W	SM2510B-2011	Specific Conductance
The Method Blank for method SM2510B-2011 reported a value greater than the reporting level for the analyte Specific Conductance. The concentration was 3.03 uhmos/cm.				
3170526003	4	CWMP005W	EPA 410.4	Chemical Oxygen Demand (COD)
The QC sample type MSLO for method EPA 410.4 was outside the control limits for the analyte Chemical Oxygen Demand (COD). The % Recovery was reported as 88.3 and the control limits were 90 to 110.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3170526001	CWMP007W	ASTM D6919-09		
3170526001	CWMP007W	EPA 300.0		
3170526001	CWMP007W	EPA 410.4		
3170526001	CWMP007W	Field		
3170526001	CWMP007W	Lib Search VOC		
3170526001	CWMP007W	S2540C-11		
3170526001	CWMP007W	S4500HB-11		
3170526001	CWMP007W	SM2130B-2011		
3170526001	CWMP007W	SM2320B-2011		
3170526001	CWMP007W	SM2510B-2011		
3170526001	CWMP007W	SM5310B-2011		
3170526001	CWMP007W	SW846 6020A	SW846 3015	
3170526001	CWMP007W	SW846 7470A	SW846 7470A	
3170526001	CWMP007W	SW846 8260B		
3170526001	CWMP007W	SW846 9066	420.4/9066	
3170526002	CWMP001W	ASTM D6919-09		
3170526002	CWMP001W	EPA 300.0		
3170526002	CWMP001W	EPA 410.4		
3170526002	CWMP001W	Field		
3170526002	CWMP001W	Lib Search VOC		
3170526002	CWMP001W	S2540C-11		
3170526002	CWMP001W	S4500HB-11		
3170526002	CWMP001W	SM2130B-2011		
3170526002	CWMP001W	SM2320B-2011		
3170526002	CWMP001W	SM2510B-2011		
3170526002	CWMP001W	SM5310B-2011		
3170526002	CWMP001W	SW846 6020A	SW846 3015	
3170526002	CWMP001W	SW846 7470A	SW846 7470A	
3170526002	CWMP001W	SW846 8260B		
3170526002	CWMP001W	SW846 9066	420.4/9066	
3170526003	CWMP005W	ASTM D6919-09		
3170526003	CWMP005W	EPA 300.0		
3170526003	CWMP005W	EPA 410.4		
3170526003	CWMP005W	Field		
3170526003	CWMP005W	Lib Search VOC		
3170526003	CWMP005W	S2540C-11		
3170526003	CWMP005W	S4500HB-11		
3170526003	CWMP005W	SM2130B-2011		
3170526003	CWMP005W	SM2320B-2011		
3170526003	CWMP005W	SM2510B-2011		
3170526003	CWMP005W	SM5310B-2011		
3170526003	CWMP005W	SW846 6020A	SW846 3015	
3170526003	CWMP005W	SW846 7470A	SW846 7470A	
3170526003	CWMP005W	SW846 8260B		
3170526003	CWMP005W	SW846 9066	420.4/9066	
3170526004	Field Blank	Lib Search VOC		

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3170526 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3170526004	Field Blank	SW846 8260B		
3170526005	Trip Blank	Lib Search VOC		
3170526005	Trip Blank	SW846 8260B		

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301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

3170526

on of Sample Receipt Form

Client:

Work

Lancaster County Solid Waste
Authority

Initials:

BBD

Date:

04/20/24

1. Were airbills / tracking numbers present and recorded?.....	NONE	YES	☒ NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?.....	NONE	YES	☒ NO
3. Are Custody Seals on sample containers intact?.....	NONE	YES	☒ NO
4. Is there a COC (Chain-of-Custody) present?.....		☒ YES	☐ NO
5. Are the COC and bottle labels complete, legible and in agreement?.....		☒ YES	☐ NO
5a. Does the COC contain sample locations?.....		☒ YES	☐ NO
5b. Does the COC contain date and time of sample collection for all samples?.....		☒ YES	☐ NO
5c. Does the COC contain sample collectors name?.....		☒ YES	☐ NO
5d. Does the COC note the type(s) of preservation for all bottles?.....		☒ YES	☐ NO
5e. Does the COC note the number of bottles submitted for each sample?.....		☒ YES	☐ NO
5f. Does the COC note the type of sample, composite or grab?.....		☒ YES	☐ NO
5g. Does the COC note the matrix of the sample(s)?.....		☒ YES	☐ NO
6. Are all aqueous samples requiring preservation preserved correctly?.....	N/A	☒ YES	☐ NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....		☒ YES	☐ NO
8. Are all samples within holding times for the requested analyses?.....		☒ YES	☐ NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....		☒ YES	☐ NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....	N/A	☒ YES	☐ NO
11. Were the samples received on ice?.....		☒ YES	☐ NO
12. Were sample temperatures measured at 0.0-6.0°C.....		☒ YES	☐ NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.....		☒ YES	☐ NO
13a. Are the samples required for SDWA compliance reporting?.....	N/A	☒ YES	☐ NO
13b. Did the client provide a SDWA PWS ID#?.....	N/A	☒ YES	☐ NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....	N/A	☒ YES	☐ NO
13d. Did the client provide the SDWA sample location ID/Description?.....	N/A	☒ YES	☐ NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....	N/A	☒ YES	☐ NO

Cooler #: _____
Temperature (°C): 2°C
Thermometer ID: 574
Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

* Field blank it wasn't received.

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

May 13, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3171495
Purchase Order:	PO-1000246	Workorder ID:	2ND QTR 2021 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 22, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

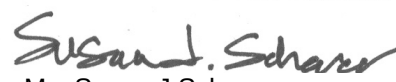
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3171495001	CWMP012W	Ground Water	4/22/2021 09:40	4/22/2021 15:28	Mr. Brian G Shade
3171495002	CWMP002W	Ground Water	4/22/2021 11:10	4/22/2021 15:28	Mr. Brian G Shade
3171495003	CWMP003W	Ground Water	4/22/2021 11:30	4/22/2021 15:28	Mr. Brian G Shade
3171495004	CWMP004W	Ground Water	4/22/2021 11:45	4/22/2021 15:28	Mr. Brian G Shade
3171495005	Field Blank	Water	4/22/2021 12:27	4/22/2021 15:28	Mr. Brian G Shade
3171495006	Trip Blank	Water	4/22/2021 00:00	4/22/2021 15:28	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ALS Environmental



301 Fulling Mill Road - Middletown, PA 17057 - Phone: 717-944-5541 - Fax: 717-944-1430 - www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

PROJECT SUMMARY

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495001**
Sample ID: **CWMP012W**

Date Collected: 4/22/2021 09:40 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 02:21	PDK	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/27/21 02:21	PDK	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 02:21	PDK	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/27/21 02:21	PDK	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/27/21 02:21	PDK	J

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495001**
Sample ID: **CWMP012W**

Date Collected: 4/22/2021 09:40 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/27/21 02:21	PDK	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/27/21 02:21	PDK	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 02:21	PDK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	88.3	C	%	62 - 133	SW846 8260B			4/27/21 02:21	PDK	J
4-Bromofluorobenzene (S)	103	C	%	79 - 114	SW846 8260B			4/27/21 02:21	PDK	J
Dibromofluoromethane (S)	82.2	C	%	78 - 116	SW846 8260B			4/27/21 02:21	PDK	J
Toluene-d8 (S)	85.6	C	%	76 - 127	SW846 8260B			4/27/21 02:21	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/27/21 02:21	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	75	C	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	B
Alkalinity, Total	75	C,1	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	A
Ammonia-N	0.126	C	mg/L	0.100	ASTM D6919-09			5/5/21 14:26	JXL	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/27/21 13:30	ALK	C
Chloride	36.0	C	mg/L	2.0	EPA 300.0			4/23/21 06:46	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/23/21 06:46	MBW	B
Nitrate-N	7.8	C	mg/L	0.20	EPA 300.0			4/23/21 06:46	MBW	B
pH	7.31	C,2	pH_Units		S4500HB-11			4/27/21 12:36	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	5/3/21 12:44	MXF	5/4/21 09:29	MXF	I
Specific Conductance	324	C	umhos/cm	1	SM2510B-2011			4/27/21 12:36	MBS	B
Sulfate	5.3	C	mg/L	2.0	EPA 300.0			4/23/21 06:46	MBW	B
Total Dissolved Solids	226	C	mg/L	25	S2540C-11			4/27/21 13:05	KXH	B
Total Organic Carbon (TOC)	2.5	C	mg/L	0.50	SM5310B-2011			5/4/21 07:50	PAG	G
Turbidity	287	C	NTU	0.10	SM2130B-2011			4/23/21 06:23	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495001**
Sample ID: **CWMP012W**

Date Collected: 4/22/2021 09:40 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Arsenic, Total	0.0044	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Barium, Total	0.092	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Barium, Dissolved	0.070	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Calcium, Total	29.9	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Calcium, Dissolved	30.5	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Iron, Total	82.5	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Iron, Dissolved	0.20	C	mg/L	0.056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Magnesium, Total	8.5	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Magnesium, Dissolved	8.8	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Manganese, Total	0.26	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Manganese, Dissolved	0.27	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:03	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:56	EAD	D
Nickel, Total	0.010	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Potassium, Total	1.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Potassium, Dissolved	1.5	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Sodium, Total	13.0	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Sodium, Dissolved	13.9	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1
Zinc, Total	0.0087	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:36	MO	E1

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495001**
Sample ID: **CWMP012W**

Date Collected: 4/22/2021 09:40 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0059	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:39	MO	D1
FIELD PARAMETERS										
pH, Field (SM4500B)	5.34	C	pH_Units		Field			4/22/21 09:40	BGS	F
Specific Conductance, Field	337	C	umhos/cm	1	Field			4/22/21 09:40	BGS	F
Temperature	12.50	C	Deg. C		Field			4/22/21 09:40	BGS	F


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495002**
Sample ID: **CWMP002W**

Date Collected: 4/22/2021 11:10 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:28	PDK	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:28	PDK	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:28	PDK	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Chlorobenzene	1.3	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Chloroethane	72.9	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,4-Dichlorobenzene	1.2	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1-Dichloroethane	11.5	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:28	PDK	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:28	PDK	J

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495002**
Sample ID: **CWMP002W**

Date Collected: 4/22/2021 11:10 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/27/21 00:28	PDK	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:28	PDK	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:28	PDK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	89.5	C	%	62 - 133	SW846 8260B			4/27/21 00:28	PDK	J
4-Bromofluorobenzene (S)	100	C	%	79 - 114	SW846 8260B			4/27/21 00:28	PDK	J
Dibromofluoromethane (S)	82.8	C	%	78 - 116	SW846 8260B			4/27/21 00:28	PDK	J
Toluene-d8 (S)	86.2	C	%	76 - 127	SW846 8260B			4/27/21 00:28	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/27/21 00:28	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	106	C	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	B
Alkalinity, Total	106	C,1	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	A
Ammonia-N	0.116	C	mg/L	0.100	ASTM D6919-09			5/5/21 14:41	JXL	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/27/21 13:30	ALK	C
Chloride	102	C	mg/L	2.0	EPA 300.0			4/23/21 07:01	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/23/21 07:01	MBW	B
Nitrate-N	4.4	C	mg/L	0.20	EPA 300.0			4/23/21 07:01	MBW	B
pH	6.70	C,2	pH_Units		S4500HB-11			4/27/21 12:36	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	5/3/21 12:44	MXF	5/4/21 09:29	MXF	I
Specific Conductance	583	C	umhos/cm	1	SM2510B-2011			4/27/21 12:36	MBS	B
Sulfate	21.9	C	mg/L	2.0	EPA 300.0			4/23/21 07:01	MBW	B
Total Dissolved Solids	354	C	mg/L	25	S2540C-11			4/27/21 13:05	KXH	B
Total Organic Carbon (TOC)	4.3	C	mg/L	0.50	SM5310B-2011			5/4/21 07:50	PAG	G
Turbidity	0.17	C	NTU	0.10	SM2130B-2011			4/23/21 06:23	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495002**
Sample ID: **CWMP002W**

Date Collected: 4/22/2021 11:10 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/28/21 22:15	SXC	5/13/21 14:22	MO	D1
Barium, Total	0.045	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Barium, Dissolved	0.045	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Calcium, Total	46.1	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Calcium, Dissolved	45.1	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Cobalt, Total	0.022	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Iron, Total	0.49	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Iron, Dissolved	0.20	C	mg/L	0.056	SW846 6020A	4/28/21 22:15	SXC	5/13/21 14:22	MO	D1
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Lead, Dissolved	0.0039	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Magnesium, Total	14.9	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Magnesium, Dissolved	15.3	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Manganese, Total	0.94	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Manganese, Dissolved	0.90	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:05	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:57	EAD	D
Nickel, Total	0.027	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Potassium, Total	2.6	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Potassium, Dissolved	2.7	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/13/21 14:22	MO	D1
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Sodium, Total	27.4	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Sodium, Dissolved	27.7	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1
Zinc, Total	0.0079	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:40	MO	E1

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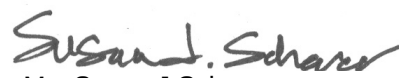
ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495002**
Sample ID: **CWMP002W**

Date Collected: 4/22/2021 11:10 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0078	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:43	MO	D1
FIELD PARAMETERS										
Depth to Water Level	60.27	C	Feet		Field			4/22/21 11:10	BGS	F
Elev Top MW Casing above MSL	525.81	C	Feet		Field			4/22/21 11:10	BGS	F
Ground Water Elevation	465.54	C	ft/MSL		Field			4/22/21 11:10	BGS	F
pH, Field (SM4500B)	5.18	C	pH_Units		Field			4/22/21 11:10	BGS	F
Sample Depth	85.00	C	Feet		Field			4/22/21 11:10	BGS	F
Specific Conductance, Field	544	C	umhos/cm	1	Field			4/22/21 11:10	BGS	F
Temperature	13.40	C	Deg. C		Field			4/22/21 11:10	BGS	F
Total Well Depth	100.00	C	Feet		Field			4/22/21 11:10	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495003**
Sample ID: **CWMP003W**

Date Collected: 4/22/2021 11:30 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:51	PDK	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:51	PDK	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:51	PDK	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1-Dichloroethane	1.5	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:51	PDK	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:51	PDK	J

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495003**
Sample ID: **CWMP003W**

Date Collected: 4/22/2021 11:30 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/27/21 00:51	PDK	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:51	PDK	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:51	PDK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	89.2	C	%	62 - 133	SW846 8260B			4/27/21 00:51	PDK	J
4-Bromofluorobenzene (S)	102	C	%	79 - 114	SW846 8260B			4/27/21 00:51	PDK	J
Dibromofluoromethane (S)	83.5	C	%	78 - 116	SW846 8260B			4/27/21 00:51	PDK	J
Toluene-d8 (S)	84.8	C	%	76 - 127	SW846 8260B			4/27/21 00:51	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/27/21 00:51	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	22	C	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	B
Alkalinity, Total	22	C,1	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	A
Ammonia-N	0.220	C	mg/L	0.100	ASTM D6919-09			5/5/21 15:25	JXL	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/27/21 13:30	ALK	C
Chloride	59.5	C	mg/L	2.0	EPA 300.0			4/23/21 07:16	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/23/21 07:16	MBW	B
Nitrate-N	7.3	C	mg/L	0.20	EPA 300.0			4/23/21 07:16	MBW	B
pH	6.83	C,2	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	5/3/21 12:44	MXF	5/4/21 09:29	MXF	I
Specific Conductance	320	C	umhos/cm	1	SM2510B-2011			4/27/21 12:36	MBS	B
Sulfate	4.8	C	mg/L	2.0	EPA 300.0			4/23/21 07:16	MBW	B
Total Dissolved Solids	236	C	mg/L	25	S2540C-11			4/27/21 13:05	KXH	B
Total Organic Carbon (TOC)	0.63	C	mg/L	0.50	SM5310B-2011			5/4/21 07:50	PAG	G
Turbidity	0.22	C	NTU	0.10	SM2130B-2011			4/23/21 06:23	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495003**
Sample ID: **CWMP003W**

Date Collected: 4/22/2021 11:30 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Barium, Total	0.017	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Barium, Dissolved	0.017	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Calcium, Total	20.1	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Calcium, Dissolved	20.4	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Iron, Total	0.079	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Magnesium, Total	7.4	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Magnesium, Dissolved	7.7	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Manganese, Total	0.0066	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Manganese, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:08	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:58	EAD	D
Nickel, Total	0.0082	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Potassium, Total	1.4	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Potassium, Dissolved	1.5	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Sodium, Total	18.1	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Sodium, Dissolved	18.5	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:43	MO	E1

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**ANALYTICAL RESULTS**

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495003**
Sample ID: **CWMP003W**Date Collected: 4/22/2021 11:30 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0057	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:46	MO	D1
FIELD PARAMETERS										
Depth to Water Level	98.64	C	Feet		Field			4/22/21 11:30	BGS	F
Elev Top MW Casing above MSL	524.21	C	Feet		Field			4/22/21 11:30	BGS	F
Ground Water Elevation	425.57	C	ft/MSL		Field			4/22/21 11:30	BGS	F
pH, Field (SM4500B)	5.14	C	pH_Units		Field			4/22/21 11:30	BGS	F
Sample Depth	100.00	C	Feet		Field			4/22/21 11:30	BGS	F
Specific Conductance, Field	306	C	umhos/cm	1	Field			4/22/21 11:30	BGS	F
Temperature	13.90	C	Deg. C		Field			4/22/21 11:30	BGS	F
Total Well Depth	140.00	C	Feet		Field			4/22/21 11:30	BGS	F

Ms. Susan J Scherer
Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495004**
Sample ID: **CWMP004W**

Date Collected: 4/22/2021 11:45 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 01:13	PDK	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/27/21 01:13	PDK	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 01:13	PDK	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/27/21 01:13	PDK	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/27/21 01:13	PDK	J

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495004**
Sample ID: **CWMP004W**

Date Collected: 4/22/2021 11:45 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/27/21 01:13	PDK	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/27/21 01:13	PDK	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 01:13	PDK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	87.4	C	%	62 - 133	SW846 8260B			4/27/21 01:13	PDK	J
4-Bromofluorobenzene (S)	104	C	%	79 - 114	SW846 8260B			4/27/21 01:13	PDK	J
Dibromofluoromethane (S)	83.1	C	%	78 - 116	SW846 8260B			4/27/21 01:13	PDK	J
Toluene-d8 (S)	88.2	C	%	76 - 127	SW846 8260B			4/27/21 01:13	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/27/21 01:13	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	31	C	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	B
Alkalinity, Total	31	C,1	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	A
Ammonia-N	0.151	C	mg/L	0.100	ASTM D6919-09			5/5/21 15:40	JXL	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/27/21 13:30	ALK	C
Chloride	44.6	C	mg/L	2.0	EPA 300.0			4/23/21 07:30	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/23/21 07:30	MBW	B
Nitrate-N	5.7	C	mg/L	0.20	EPA 300.0			4/23/21 07:30	MBW	B
pH	6.82	C,2	pH_Units		S4500HB-11			4/27/21 12:36	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	5/3/21 12:44	MXF	5/4/21 09:29	MXF	I
Specific Conductance	268	C	umhos/cm	1	SM2510B-2011			4/27/21 12:36	MBS	B
Sulfate	5.6	C	mg/L	2.0	EPA 300.0			4/23/21 07:30	MBW	B
Total Dissolved Solids	202	C	mg/L	25	S2540C-11			4/27/21 13:05	KXH	B
Total Organic Carbon (TOC)	0.74	C	mg/L	0.50	SM5310B-2011			5/4/21 07:50	PAG	G
Turbidity	ND	C	NTU	0.10	SM2130B-2011			4/23/21 06:23	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495004**
Sample ID: **CWMP004W**

Date Collected: 4/22/2021 11:45 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Barium, Total	0.022	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Barium, Dissolved	0.022	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Calcium, Total	18.1	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Calcium, Dissolved	18.1	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Iron, Total	ND	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Magnesium, Total	6.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Magnesium, Dissolved	6.3	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Manganese, Total	0.0080	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Manganese, Dissolved	0.0079	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:09	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 11:02	EAD	D
Nickel, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Potassium, Total	1.2	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Potassium, Dissolved	1.2	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Sodium, Total	14.8	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Sodium, Dissolved	14.7	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:47	MO	E1

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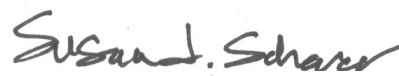
ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495004**
Sample ID: **CWMP004W**

Date Collected: 4/22/2021 11:45 Matrix: Ground Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:50	MO	D1
FIELD PARAMETERS										
Depth to Water Level	101.29	C	Feet		Field			4/22/21 11:45	BGS	F
Elev Top MW Casing above MSL	529.53	C	Feet		Field			4/22/21 11:45	BGS	F
Ground Water Elevation	428.24	C	ft/MSL		Field			4/22/21 11:45	BGS	F
pH, Field (SM4500B)	5.46	C	pH_Units		Field			4/22/21 11:45	BGS	F
Sample Depth	130.00	C	Feet		Field			4/22/21 11:45	BGS	F
Specific Conductance, Field	252	C	umhos/cm	1	Field			4/22/21 11:45	BGS	F
Temperature	14.80	C	Deg. C		Field			4/22/21 11:45	BGS	F
Total Well Depth	140.00	C	Feet		Field			4/22/21 11:45	BGS	F


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495005**
Sample ID: **Field Blank**

Date Collected: 4/22/2021 12:27 Matrix: Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:06	PDK	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:06	PDK	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/27/21 00:06	PDK	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:06	PDK	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:06	PDK	J

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495005**

Date Collected: 4/22/2021 12:27

Matrix: Water

Sample ID: **Field Blank**

Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/27/21 00:06	PDK	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/27/21 00:06	PDK	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/27/21 00:06	PDK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	90.3	C	%	62 - 133	SW846 8260B			4/27/21 00:06	PDK	J
4-Bromofluorobenzene (S)	103	C	%	79 - 114	SW846 8260B			4/27/21 00:06	PDK	J
Dibromofluoromethane (S)	85	C	%	78 - 116	SW846 8260B			4/27/21 00:06	PDK	J
Toluene-d8 (S)	89.5	C	%	76 - 127	SW846 8260B			4/27/21 00:06	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/27/21 00:06	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND	C	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	B
Alkalinity, Total	ND	C,1	mg/L	5	SM2320B-2011			4/27/21 12:36	MBS	A
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			5/5/21 15:54	JXL	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/27/21 13:30	ALK	C
Chloride	ND	C	mg/L	1.0	EPA 300.0			4/23/21 05:46	MBW	B
Fluoride	ND	C	mg/L	0.10	EPA 300.0			4/23/21 05:46	MBW	B
Nitrate-N	ND	C	mg/L	0.10	EPA 300.0			4/23/21 05:46	MBW	B
pH	5.65	C,2	pH_Units		S4500HB-11			4/27/21 12:36	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	5/3/21 12:44	MXF	5/4/21 09:29	MXF	I
Specific Conductance	2	C	umhos/cm	1	SM2510B-2011			4/27/21 12:36	MBS	B
Sulfate	ND	C	mg/L	1.0	EPA 300.0			4/23/21 05:46	MBW	B
Total Dissolved Solids	ND	C	mg/L	25	S2540C-11			4/27/21 13:05	KXH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SM5310B-2011			5/4/21 07:50	PAG	G
Turbidity	ND	C	NTU	0.10	SM2130B-2011			4/23/21 06:23	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495005**

Date Collected: 4/22/2021 12:27

Matrix: Water

Sample ID: **Field Blank**

Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Barium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Barium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Calcium, Total	ND	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Calcium, Dissolved	ND	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Iron, Total	0.058	C	mg/L	0.056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Lead, Total	0.0022	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Lead, Dissolved	0.0039	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Magnesium, Total	ND	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Magnesium, Dissolved	ND	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Manganese, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Manganese, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 10:11	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 11:03	EAD	D
Nickel, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Potassium, Total	ND	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Potassium, Dissolved	ND	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Sodium, Total	ND	C	mg/L	0.11	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Sodium, Dissolved	ND	C	mg/L	0.11	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 16:34	AHI	5/12/21 12:50	MO	E1

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495005**
Sample ID: **Field Blank**

Date Collected: 4/22/2021 12:27 Matrix: Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/28/21 22:15	SXC	5/12/21 19:53	MO	D1

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495006**
Sample ID: **Trip Blank**

Date Collected: 4/22/2021 00:00 Matrix: Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/26/21 23:20	PDK	A
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/26/21 23:20	PDK	A
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/26/21 23:20	PDK	A
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/26/21 23:20	PDK	A
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/26/21 23:20	PDK	A

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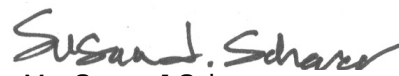
ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171495006**
Sample ID: **Trip Blank**

Date Collected: 4/22/2021 00:00 Matrix: Water
Date Received: 4/22/2021 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/26/21 23:20	PDK	A
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/26/21 23:20	PDK	A
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/26/21 23:20	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	89.3	C	%	62 - 133	SW846 8260B			4/26/21 23:20	PDK	A
4-Bromofluorobenzene (S)	101	C	%	79 - 114	SW846 8260B			4/26/21 23:20	PDK	A
Dibromofluoromethane (S)	86.2	C	%	78 - 116	SW846 8260B			4/26/21 23:20	PDK	A
Toluene-d8 (S)	89.6	C	%	76 - 127	SW846 8260B			4/26/21 23:20	PDK	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/26/21 23:20	CPK	A


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3171495001	1	CWMP012W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171495001	2	CWMP012W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171495002	1	CWMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171495002	2	CWMP002W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171495003	1	CWMP003W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171495003	2	CWMP003W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171495004	1	CWMP004W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171495004	2	CWMP004W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171495005	1	Field Blank	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171495005	2	Field Blank	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3171495001	CWMP012W	ASTM D6919-09		
3171495001	CWMP012W	EPA 300.0		
3171495001	CWMP012W	EPA 410.4		
3171495001	CWMP012W	Field		
3171495001	CWMP012W	Lib Search VOC		
3171495001	CWMP012W	S2540C-11		
3171495001	CWMP012W	S4500HB-11		
3171495001	CWMP012W	SM2130B-2011		
3171495001	CWMP012W	SM2320B-2011		
3171495001	CWMP012W	SM2510B-2011		
3171495001	CWMP012W	SM5310B-2011		
3171495001	CWMP012W	SW846 6020A	SW846 3015	
3171495001	CWMP012W	SW846 7470A	SW846 7470A	
3171495001	CWMP012W	SW846 8260B		
3171495001	CWMP012W	SW846 9066	420.4/9066	
3171495002	CWMP002W	ASTM D6919-09		
3171495002	CWMP002W	EPA 300.0		
3171495002	CWMP002W	EPA 410.4		
3171495002	CWMP002W	Field		
3171495002	CWMP002W	Lib Search VOC		
3171495002	CWMP002W	S2540C-11		
3171495002	CWMP002W	S4500HB-11		
3171495002	CWMP002W	SM2130B-2011		
3171495002	CWMP002W	SM2320B-2011		
3171495002	CWMP002W	SM2510B-2011		
3171495002	CWMP002W	SM5310B-2011		
3171495002	CWMP002W	SW846 6020A	SW846 3015	
3171495002	CWMP002W	SW846 7470A	SW846 7470A	
3171495002	CWMP002W	SW846 8260B		
3171495002	CWMP002W	SW846 9066	420.4/9066	
3171495003	CWMP003W	ASTM D6919-09		
3171495003	CWMP003W	EPA 300.0		
3171495003	CWMP003W	EPA 410.4		
3171495003	CWMP003W	Field		
3171495003	CWMP003W	Lib Search VOC		
3171495003	CWMP003W	S2540C-11		
3171495003	CWMP003W	S4500HB-11		
3171495003	CWMP003W	SM2130B-2011		
3171495003	CWMP003W	SM2320B-2011		
3171495003	CWMP003W	SM2510B-2011		
3171495003	CWMP003W	SM5310B-2011		
3171495003	CWMP003W	SW846 6020A	SW846 3015	
3171495003	CWMP003W	SW846 7470A	SW846 7470A	
3171495003	CWMP003W	SW846 8260B		
3171495003	CWMP003W	SW846 9066	420.4/9066	
3171495004	CWMP004W	ASTM D6919-09		

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3171495 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3171495004	CWMP004W	EPA 300.0		
3171495004	CWMP004W	EPA 410.4		
3171495004	CWMP004W	Field		
3171495004	CWMP004W	Lib Search VOC		
3171495004	CWMP004W	S2540C-11		
3171495004	CWMP004W	S4500HB-11		
3171495004	CWMP004W	SM2130B-2011		
3171495004	CWMP004W	SM2320B-2011		
3171495004	CWMP004W	SM2510B-2011		
3171495004	CWMP004W	SM5310B-2011		
3171495004	CWMP004W	SW846 6020A	SW846 3015	
3171495004	CWMP004W	SW846 7470A	SW846 7470A	
3171495004	CWMP004W	SW846 8260B		
3171495004	CWMP004W	SW846 9066	420.4/9066	
3171495005	Field Blank	ASTM D6919-09		
3171495005	Field Blank	EPA 300.0		
3171495005	Field Blank	EPA 410.4		
3171495005	Field Blank	Lib Search VOC		
3171495005	Field Blank	S2540C-11		
3171495005	Field Blank	S4500HB-11		
3171495005	Field Blank	SM2130B-2011		
3171495005	Field Blank	SM2320B-2011		
3171495005	Field Blank	SM2510B-2011		
3171495005	Field Blank	SM5310B-2011		
3171495005	Field Blank	SW846 6020A	SW846 3015	
3171495005	Field Blank	SW846 7470A	SW846 7470A	
3171495005	Field Blank	SW846 8260B		
3171495005	Field Blank	SW846 9066	420.4/9066	
3171495006	Trip Blank	Lib Search VOC		
3171495006	Trip Blank	SW846 8260B		

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301 Filling Mill Rd • Middletown, PA 17057 • 717-944-5541 • Fax: 717-944-1430

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Dan Brown

Phone#: (717) 735-0193

Project Name#: Creswell/GWMP Form 19A

Bill To: Lancaster County Solid Waste MA

TAT ☒ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? ☒ Y ☐ N dbrown@LCSWMA.org

Fax? ☒ Y ☐ N No.: (717) 397-9973

Sample Description/Location
(as it will appear on the lab report)

Sample Date

Time

1. CWMP012W	04/22/21	0940
2. CWMP002W	04/22/21	1110
3. CWMP003W	04/22/21	1130
4. CWMP004W	04/22/21	1145
5. Field Blank	04/22/21	12:27
6. Trip Blank	04/22/21	15:28
7		
8		
9		
10		

Project Comments:

Relinquished By / Company Name

Date

Received By / Company Name

Date

Time

Time

LOGGED BY (signature):

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

REVIEWED BY (signature):

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

CHAIN OF CUSTODY/

REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /

SAMPLER. INSTRUCTIONS ON THE BACK.

ANALYSES/METHOD REQUESTED										Container		Cooler Temp:		Therm ID:		Receiving Lab)	
Container Type	AG	AN	CG	PL	PL	PL	PL	PL	PL	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml
Container Size	40 ml	125 ml	40 ml	1L	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml
Preservative	HCl	H2SO4	HCl	None	None	None	None	None	None	HNO3	HNO3	HNO3	HNO3	HNO3	HNO3	HNO3	HNO3
TOC	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
O-H	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8260 VOCs - Form 19A + Subtitle D	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
pH, Cl, SpC, F, SO4, NO3, TP, TDS	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Alkalinity, HCO3	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FM	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sample Depth for AUX Data	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NH3-N, COD	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Diss Metals Form 19A (Field Filtered)	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Metals Form 19A + Subtitle D	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

3171495

Client:

Work Order:

Lancaster County Solid Waste
Authority

als:

AS

Date:

4/23/21

1. Were airbills / tracking numbers present and recorded?	NONE	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?	NONE	YES	NO
3. Are Custody Seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present?	YES	YES	NO
5. Are the COC and bottle labels complete, legible and in agreement?	YES	YES	NO
5a. Does the COC contain sample locations?	YES	YES	NO
5b. Does the COC contain date and time of sample collection for all samples?	YES	YES	NO
5c. Does the COC contain sample collectors name?	YES	YES	NO
5d. Does the COC note the type(s)-of preservation for all bottles?	YES	YES	NO
5e. Does the COC note the number of bottles submitted for each sample?	YES	YES	NO
5f. Does the COC note the type of sample, composite or grab?	YES	YES	NO
5g. Does the COC note the matrix of the sample(s)?	YES	YES	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	YES	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?	YES	YES	NO
8. Are all samples within holding times for the requested analyses?	YES	YES	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)	YES	YES	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	N/A	YES	NO
11. Were the samples received on ice?	YES	YES	NO
12. Were sample temperatures measured at 0.0-6.0°C	YES	YES	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.	YES	YES	NO
13a. Are the samples required for SDWA compliance reporting?	N/A	YES	NO
13b. Did the client provide a SDWA PWS ID#?	N/A	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	N/A	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	N/A	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	N/A	YES	NO

Cooler #: _____

Temperature (°C): 1 _____

Thermometer ID: 573 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

Rev 1/20/2020

ALS

May 17, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3171154
Purchase Order:	PO-1000246	Workorder ID:	2ND QTR 2021 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, April 21, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

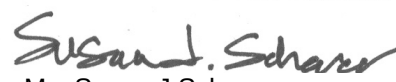
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

*This page is included as part of the Analytical Report and
must be retained as a permanent record thereof.*


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3171154001	CWMP017S	Ground Water	4/21/2021 10:19	4/21/2021 14:55	Mr. Brian G Shade
3171154002	CWMP018S	Ground Water	4/21/2021 10:41	4/21/2021 14:55	Mr. Brian G Shade
3171154003	CWMP016W	Ground Water	4/21/2021 11:19	4/21/2021 14:55	Mr. Brian G Shade
3171154004	CWMP010W	Ground Water	4/21/2021 11:46	4/21/2021 14:55	Mr. Brian G Shade
3171154005	CWMP009W	Ground Water	4/21/2021 12:19	4/21/2021 14:55	Mr. Brian G Shade
3171154006	CWMP008W	Ground Water	4/21/2021 12:56	4/21/2021 14:55	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154001**
Sample ID: **CWMP017S**

Date Collected: 4/21/2021 10:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 15:46	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 15:46	DPC	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Bromoform	1.0	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 15:46	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 15:46	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 15:46	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154001**
Sample ID: **CWMP017S**

Date Collected: 4/21/2021 10:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 15:46	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 15:46	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 15:46	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101	C	%	62 - 133	SW846 8260B			4/23/21 15:46	DPC	J
4-Bromofluorobenzene (S)	105	C	%	79 - 114	SW846 8260B			4/23/21 15:46	DPC	J
Dibromofluoromethane (S)	102	C	%	78 - 116	SW846 8260B			4/23/21 15:46	DPC	J
Toluene-d8 (S)	96.1	C	%	76 - 127	SW846 8260B			4/23/21 15:46	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 15:46	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	651	C	mg/L	50	SM2320B-2011			4/27/21 23:59	MBS	B
Alkalinity, Total	651	C,2	mg/L	5	SM2320B-2011			4/27/21 23:59	MBS	A
Ammonia-N	0.149	C	mg/L	0.100	ASTM D6919-09			5/5/21 13:39	MAP	C
Chemical Oxygen Demand (COD)	18	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	639	C	mg/L	5.0	EPA 300.0			4/22/21 06:34	MBW	B
Fluoride	ND	C	mg/L	0.50	EPA 300.0			4/22/21 06:34	MBW	B
Nitrate-N	25.4	C	mg/L	0.50	EPA 300.0			4/22/21 06:34	MBW	B
pH	8.32	C,1	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	2870	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	79.7	C	mg/L	5.0	EPA 300.0			4/22/21 06:34	MBW	B
Total Dissolved Solids	1640	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	4.4	C	mg/L	0.50	SM5310B-2011			5/1/21 10:16	PAG	G
Turbidity	1.04	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154001**
Sample ID: **CWMP017S**

Date Collected: 4/21/2021 10:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Barium, Total	0.028	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Barium, Dissolved	0.029	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Calcium, Total	53.4	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Calcium, Dissolved	53.2	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Copper, Total	0.023	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Copper, Dissolved	0.019	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Iron, Total	0.41	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Iron, Dissolved	0.24	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Lead, Total	0.11	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Lead, Dissolved	0.0035	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Magnesium, Total	102	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Magnesium, Dissolved	94.5	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Manganese, Total	0.040	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Manganese, Dissolved	0.037	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:39	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:33	EAD	D
Nickel, Total	0.0098	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Potassium, Total	12.9	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Potassium, Dissolved	12.1	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
Sodium, Total	4160	C	mg/L	11.0	SW846 6020A	4/25/21 13:05	AHI	5/17/21 17:25	MO	E1
Sodium, Dissolved	405	C	mg/L	1.1	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:12	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1
Zinc, Total	0.094	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:44	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154001**
Sample ID: **CWMP017S**

Date Collected: 4/21/2021 10:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.090	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:07	MO	D
FIELD PARAMETERS										
Dissolved Oxygen	11.44	C	mg/L	0.01	Field			4/21/21 10:19	BGS	F
pH, Field (SM4500B)	8.07	C	pH_Units		Field			4/21/21 10:19	BGS	F
Specific Conductance, Field	4339	C	umhos/cm	1	Field			4/21/21 10:19	BGS	F
Temperature	17.16	C	Deg. C		Field			4/21/21 10:19	BGS	F


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154002**
Sample ID: **CWMP018S**

Date Collected: 4/21/2021 10:41 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:08	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:08	DPC	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:08	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:08	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:08	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154002**
Sample ID: **CWMP018S**

Date Collected: 4/21/2021 10:41 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 16:08	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:08	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:08	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104	C	%	62 - 133	SW846 8260B			4/23/21 16:08	DPC	J
4-Bromofluorobenzene (S)	105	C	%	79 - 114	SW846 8260B			4/23/21 16:08	DPC	J
Dibromofluoromethane (S)	101	C	%	78 - 116	SW846 8260B			4/23/21 16:08	DPC	J
Toluene-d8 (S)	99.3	C	%	76 - 127	SW846 8260B			4/23/21 16:08	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 16:08	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	328	C	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	B
Alkalinity, Total	349	C,1	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	A
Ammonia-N	0.222	C	mg/L	0.100	ASTM D6919-09			5/5/21 13:53	MAP	C
Chemical Oxygen Demand (COD)	27	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	439	C	mg/L	5.0	EPA 300.0			4/22/21 06:49	MBW	B
Fluoride	ND	C	mg/L	0.50	EPA 300.0			4/22/21 06:49	MBW	B
Nitrate-N	18.6	C	mg/L	0.50	EPA 300.0			4/22/21 06:49	MBW	B
pH	8.55	C,2	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	2000	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	33.6	C	mg/L	5.0	EPA 300.0			4/22/21 06:49	MBW	B
Total Dissolved Solids	1130	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	7.6	C	mg/L	0.50	SM5310B-2011			5/1/21 10:16	PAG	G
Turbidity	0.98	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154002**
Sample ID: **CWMP018S**

Date Collected: 4/21/2021 10:41 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Barium, Total	0.044	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Barium, Dissolved	0.042	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Calcium, Total	58.6	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Calcium, Dissolved	57.7	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Copper, Total	0.011	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Copper, Dissolved	0.0099	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Iron, Total	0.12	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Iron, Dissolved	0.078	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Lead, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Magnesium, Total	65.3	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Magnesium, Dissolved	59.4	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Manganese, Total	0.0084	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Manganese, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:40	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:34	EAD	D
Nickel, Total	0.014	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Potassium, Total	18.3	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Potassium, Dissolved	17.2	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
Sodium, Total	2680	C	mg/L	11.0	SW846 6020A	4/25/21 13:05	AHI	5/17/21 17:47	MO	E1
Sodium, Dissolved	269	C	mg/L	1.1	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:16	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1
Zinc, Total	0.024	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:47	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154002**
Sample ID: **CWMP018S**

Date Collected: 4/21/2021 10:41 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.025	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:54	MO	D
FIELD PARAMETERS										
Dissolved Oxygen	11.67	C	mg/L	0.01	Field			4/21/21 10:41	BGS	F
pH, Field (SM4500B)	8.61	C	pH_Units		Field			4/21/21 10:41	BGS	F
Specific Conductance, Field	2852	C	umhos/cm	1	Field			4/21/21 10:41	BGS	F
Temperature	14.35	C	Deg. C		Field			4/21/21 10:41	BGS	F


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154003**
Sample ID: **CWMP016W**

Date Collected: 4/21/2021 11:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:30	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:30	DPC	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:30	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:30	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:30	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154003**
Sample ID: **CWMP016W**

Date Collected: 4/21/2021 11:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 16:30	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:30	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:30	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101	C	%	62 - 133	SW846 8260B			4/23/21 16:30	DPC	J
4-Bromofluorobenzene (S)	105	C	%	79 - 114	SW846 8260B			4/23/21 16:30	DPC	J
Dibromofluoromethane (S)	100	C	%	78 - 116	SW846 8260B			4/23/21 16:30	DPC	J
Toluene-d8 (S)	96.8	C	%	76 - 127	SW846 8260B			4/23/21 16:30	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 16:30	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	8	C	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	B
Alkalinity, Total	8	C,1	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	A
Ammonia-N	0.171	C	mg/L	0.100	ASTM D6919-09			5/5/21 15:56	MAP	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	3.8	C	mg/L	2.0	EPA 300.0			4/22/21 08:19	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/22/21 08:19	MBW	B
Nitrate-N	2.9	C	mg/L	0.20	EPA 300.0			4/22/21 08:19	MBW	B
pH	6.45	C,2	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	72	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	9.7	C	mg/L	2.0	EPA 300.0			4/22/21 08:19	MBW	B
Total Dissolved Solids	74	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	0.61	C	mg/L	0.50	SM5310B-2011			5/1/21 10:16	PAG	G
Turbidity	1.46	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154003**
Sample ID: **CWMP016W**

Date Collected: 4/21/2021 11:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Barium, Total	0.011	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Barium, Dissolved	0.011	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Calcium, Total	5.7	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Calcium, Dissolved	5.7	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Cobalt, Total	0.0074	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Iron, Total	0.23	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Lead, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Lead, Dissolved	0.0025	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Magnesium, Total	1.7	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Magnesium, Dissolved	1.4	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Manganese, Total	0.0093	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Manganese, Dissolved	0.0077	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:41	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:35	EAD	D
Nickel, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Potassium, Total	0.51	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Potassium, Dissolved	0.46	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Sodium, Total	3.4	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 17:50	MO	E1
Sodium, Dissolved	3.2	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:51	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154003**
Sample ID: **CWMP016W**

Date Collected: 4/21/2021 11:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 16:58	MO	D
FIELD PARAMETERS										
Elev Top MW Casing above MSL	311.97	C	Feet		Field			4/21/21 11:19	BGS	F
Flow Rate	2.13	C	gal/min		Field			4/21/21 11:19	BGS	F
Ground Water Elevation	311.97	C	ft/MSL		Field			4/21/21 11:19	BGS	F
pH, Field (SM4500B)	5.24	C	pH_Units		Field			4/21/21 11:19	BGS	F
Sample Depth	71.00	C	Feet		Field			4/21/21 11:19	BGS	F
Specific Conductance, Field	100	C	umhos/cm	1	Field			4/21/21 11:19	BGS	F
Temperature	12.41	C	Deg. C		Field			4/21/21 11:19	BGS	F
Total Well Depth	73.52	C	Feet		Field			4/21/21 11:19	BGS	F
Volume in Water Column	108.07	C	Gallons		Field			4/21/21 11:19	BGS	F
Water Level After Purge	18.03	C	Feet		Field			4/21/21 11:19	BGS	F
Well Volumes Purged	1.38	C	Vol		Field			4/21/21 11:19	BGS	F

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154004**
Sample ID: **CWMP010W**

Date Collected: 4/21/2021 11:46 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:53	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:53	DPC	J
Benzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 16:53	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:53	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:53	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154004**
Sample ID: **CWMP010W**

Date Collected: 4/21/2021 11:46 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 16:53	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 16:53	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 16:53	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101	C	%	62 - 133	SW846 8260B			4/23/21 16:53	DPC	J
4-Bromofluorobenzene (S)	103	C	%	79 - 114	SW846 8260B			4/23/21 16:53	DPC	J
Dibromofluoromethane (S)	102	C	%	78 - 116	SW846 8260B			4/23/21 16:53	DPC	J
Toluene-d8 (S)	97.3	C	%	76 - 127	SW846 8260B			4/23/21 16:53	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 16:53	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	161	C	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	B
Alkalinity, Total	161	C,1	mg/L	5	SM2320B-2011			4/26/21 23:54	MBS	A
Ammonia-N	0.157	C	mg/L	0.100	ASTM D6919-09			5/5/21 14:07	MAP	C
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	103	C	mg/L	2.0	EPA 300.0			4/22/21 08:34	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/22/21 08:34	MBW	B
Nitrate-N	6.1	C	mg/L	0.20	EPA 300.0			4/22/21 08:34	MBW	B
pH	7.31	C,2	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	665	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	23.8	C	mg/L	2.0	EPA 300.0			4/22/21 08:34	MBW	B
Total Dissolved Solids	374	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	2.7	C	mg/L	0.50	SM5310B-2011			5/1/21 10:16	PAG	G
Turbidity	2.90	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154004**
Sample ID: **CWMP010W**

Date Collected: 4/21/2021 11:46 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Barium, Total	0.026	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Barium, Dissolved	0.024	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Calcium, Total	22.9	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Calcium, Dissolved	22.7	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Chromium, Total	0.0057	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Cobalt, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Copper, Total	0.0071	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Iron, Total	0.22	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Iron, Dissolved	ND	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Lead, Total	0.017	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Lead, Dissolved	0.0033	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Magnesium, Total	21.7	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Magnesium, Dissolved	20.8	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Manganese, Total	0.10	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Manganese, Dissolved	0.0093	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:45	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:36	EAD	D
Nickel, Total	0.018	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Potassium, Total	4.3	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Potassium, Dissolved	4.4	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Sodium, Total	75.1	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 17:53	MO	E1
Sodium, Dissolved	70.9	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:54	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154004**
Sample ID: **CWMP010W**

Date Collected: 4/21/2021 11:46 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:01	MO	D
FIELD PARAMETERS										
Depth to Water Level	8.55	C	Feet		Field			4/21/21 11:46	BGS	F
Elev Top MW Casing above MSL	360.90	C	Feet		Field			4/21/21 11:46	BGS	F
Flow Rate	1.00	C	gal/min		Field			4/21/21 11:46	BGS	F
Ground Water Elevation	352.35	C	ft/MSL		Field			4/21/21 11:46	BGS	F
pH, Field (SM4500B)	6.75	C	pH_Units		Field			4/21/21 11:46	BGS	F
Sample Depth	17.00	C	Feet		Field			4/21/21 11:46	BGS	F
Specific Conductance, Field	1060	C	umhos/cm	1	Field			4/21/21 11:46	BGS	F
Temperature	11.12	C	Deg. C		Field			4/21/21 11:46	BGS	F
Total Well Depth	19.60	C	Feet		Field			4/21/21 11:46	BGS	F
Volume in Water Column	7.18	C	Gallons		Field			4/21/21 11:46	BGS	F
Water Level After Purge	16.34	C	Feet		Field			4/21/21 11:46	BGS	F
Well Volumes Purged	1.39	C	Vol		Field			4/21/21 11:46	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154005**
Sample ID: **CWMP009W**

Date Collected: 4/21/2021 12:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 17:15	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:15	DPC	J
Benzene	2.1	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 17:15	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Chlorobenzene	21.8	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Chloroethane	11.2	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2-Dichlorobenzene	2.3	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,4-Dichlorobenzene	10.0	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Dichlorodifluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1-Dichloroethane	1.4	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:15	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:15	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154005**
Sample ID: **CWMP009W**

Date Collected: 4/21/2021 12:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 17:15	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:15	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:15	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101	C	%	62 - 133	SW846 8260B			4/23/21 17:15	DPC	J
4-Bromofluorobenzene (S)	105	C	%	79 - 114	SW846 8260B			4/23/21 17:15	DPC	J
Dibromofluoromethane (S)	101	C	%	78 - 116	SW846 8260B			4/23/21 17:15	DPC	J
Toluene-d8 (S)	97.3	C	%	76 - 127	SW846 8260B			4/23/21 17:15	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 17:15	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	558	C	mg/L	50	SM2320B-2011			4/27/21 23:59	MBS	B
Alkalinity, Total	558	C,2	mg/L	50	SM2320B-2011			4/27/21 23:59	MBS	A
Ammonia-N	29.4	C	mg/L	0.100	ASTM D6919-09			5/5/21 14:20	MAP	C
Chemical Oxygen Demand (COD)	121	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	560	C	mg/L	10.0	EPA 300.0			4/27/21 08:25	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/22/21 08:49	MBW	B
Nitrate-N	ND	C	mg/L	0.20	EPA 300.0			4/22/21 08:49	MBW	B
pH	6.51	C,1	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	2720	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	6.1	C	mg/L	2.0	EPA 300.0			4/22/21 08:49	MBW	B
Total Dissolved Solids	1510	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	35.7	C	mg/L	5.0	SM5310B-2011			5/1/21 10:16	PAG	G
Turbidity	58.6	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154005**
Sample ID: **CWMP009W**

Date Collected: 4/21/2021 12:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Arsenic, Total	0.0039	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Arsenic, Dissolved	0.0036	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Barium, Total	0.75	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Barium, Dissolved	0.80	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Calcium, Total	142	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Calcium, Dissolved	147	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Cobalt, Total	0.056	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Iron, Total	37.1	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Iron, Dissolved	32.8	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Lead, Total	0.015	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Lead, Dissolved	0.0040	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Magnesium, Total	78.0	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Magnesium, Dissolved	74.2	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Manganese, Total	11.6	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Manganese, Dissolved	10.8	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:46	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:38	EAD	D
Nickel, Total	0.074	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Potassium, Total	32.8	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Potassium, Dissolved	32.1	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Sodium, Total	189	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 17:57	MO	E1
Sodium, Dissolved	169	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 01:58	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154005**
Sample ID: **CWMP009W**

Date Collected: 4/21/2021 12:19 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:05	MO	D
FIELD PARAMETERS										
Depth to Water Level	9.03	C	Feet		Field			4/21/21 12:19	BGS	F
Elev Top MW Casing above MSL	404.20	C	Feet		Field			4/21/21 12:19	BGS	F
Flow Rate	1.43	C	gal/min		Field			4/21/21 12:19	BGS	F
Ground Water Elevation	395.17	C	ft/MSL		Field			4/21/21 12:19	BGS	F
pH, Field (SM4500B)	6.20	C	pH_Units		Field			4/21/21 12:19	BGS	F
Sample Depth	16.00	C	Feet		Field			4/21/21 12:19	BGS	F
Specific Conductance, Field	4035	C	umhos/cm	1	Field			4/21/21 12:19	BGS	F
Temperature	11.30	C	Deg. C		Field			4/21/21 12:19	BGS	F
Total Well Depth	19.70	C	Feet		Field			4/21/21 12:19	BGS	F
Volume in Water Column	6.94	C	Gallons		Field			4/21/21 12:19	BGS	F
Water Level After Purge	10.82	C	Feet		Field			4/21/21 12:19	BGS	F
Well Volumes Purged	4.13	C	Vol		Field			4/21/21 12:19	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154006**
Sample ID: **CWMP008W**

Date Collected: 4/21/2021 12:56 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 17:37	DPC	J
Acrylonitrile	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:37	DPC	J
Benzene	1.6	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Bromochloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Bromoform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
2-Butanone	ND	C	ug/L	10.0	SW846 8260B			4/23/21 17:37	DPC	J
Carbon Disulfide	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Chlorobenzene	8.1	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Chloroethane	5.7	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Chloroform	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
3-Chloro-1-propene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2-Dibromo-3-chloropropane	ND	C	ug/L	7.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Dibromomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
trans-1,4-Dichloro-2-butene	ND	C	ug/L	3.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2-Dichlorobenzene	1.0	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,4-Dichlorobenzene	10.6	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Dichlorodifluoromethane	1.5	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1-Dichloroethane	2.5	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
cis-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
trans-1,3-Dichloropropene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
2-Hexanone	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:37	DPC	J
Iodomethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
4-Methyl-2-Pentanone(MIBK)	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:37	DPC	J

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154006**
Sample ID: **CWMP008W**

Date Collected: 4/21/2021 12:56 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Styrene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1,1,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Toluene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			4/23/21 17:37	DPC	J
Vinyl Acetate	ND	C	ug/L	5.0	SW846 8260B			4/23/21 17:37	DPC	J
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			4/23/21 17:37	DPC	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104	C	%	62 - 133	SW846 8260B			4/23/21 17:37	DPC	J
4-Bromofluorobenzene (S)	105	C	%	79 - 114	SW846 8260B			4/23/21 17:37	DPC	J
Dibromofluoromethane (S)	103	C	%	78 - 116	SW846 8260B			4/23/21 17:37	DPC	J
Toluene-d8 (S)	98.3	C	%	76 - 127	SW846 8260B			4/23/21 17:37	DPC	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.	C			Lib Search VOC			4/23/21 17:37	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	417	C	mg/L	50	SM2320B-2011			4/27/21 23:59	MBS	B
Alkalinity, Total	417	C,2	mg/L	50	SM2320B-2011			4/27/21 23:59	MBS	A
Ammonia-N	5.61	C	mg/L	0.100	ASTM D6919-09			5/5/21 14:34	MAP	C
Chemical Oxygen Demand (COD)	44	C	mg/L	15	EPA 410.4			4/23/21 16:15	ALK	C
Chloride	30.8	C	mg/L	2.0	EPA 300.0			4/22/21 09:03	MBW	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			4/22/21 09:03	MBW	B
Nitrate-N	ND	C	mg/L	0.20	EPA 300.0			4/22/21 09:03	MBW	B
pH	6.53	C,1	pH_Units		S4500HB-11			4/26/21 23:54	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	4/27/21 12:14	MXF	4/27/21 09:03	MXF	I
Specific Conductance	760	C	umhos/cm	1	SM2510B-2011			4/26/21 23:54	MBS	B
Sulfate	7.0	C	mg/L	2.0	EPA 300.0			4/22/21 09:03	MBW	B
Total Dissolved Solids	398	C	mg/L	25	S2540C-11			4/26/21 14:32	KXH	B
Total Organic Carbon (TOC)	7.0	C	mg/L	0.50	SM5310B-2011			5/3/21 20:18	PAG	G
Turbidity	25.7	C	NTU	0.10	SM2130B-2011			4/22/21 07:34	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154006**
Sample ID: **CWMP008W**

Date Collected: 4/21/2021 12:56 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Arsenic, Total	ND	C	mg/L	0.0033	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Arsenic, Dissolved	ND	C	mg/L	0.0030	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Barium, Total	0.13	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Barium, Dissolved	0.12	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Beryllium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Cadmium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Cadmium, Dissolved	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Calcium, Total	60.6	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Calcium, Dissolved	57.3	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Chromium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Chromium, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Cobalt, Total	0.031	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Copper, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Copper, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Iron, Total	24.3	C	mg/L	0.056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Iron, Dissolved	21.9	C	mg/L	0.056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Lead, Total	0.031	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Lead, Dissolved	0.0026	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Magnesium, Total	28.1	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Magnesium, Dissolved	26.4	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Manganese, Total	15.5	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Manganese, Dissolved	13.6	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Mercury, Total	ND	C	mg/L	0.00050	SW846 7470A	4/30/21 05:51	EAD	4/30/21 09:48	EAD	E
Mercury, Dissolved	ND	C	mg/L	0.00050	SW846 7470A	4/25/21 11:53	AHI	4/26/21 09:44	EAD	D
Nickel, Total	0.019	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Potassium, Total	7.7	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Potassium, Dissolved	7.4	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Selenium, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Selenium, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Silver, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Silver, Dissolved	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Sodium, Total	32.3	C	mg/L	0.11	SW846 6020A	4/25/21 13:05	AHI	5/17/21 18:00	MO	E1
Sodium, Dissolved	29.6	C	mg/L	0.11	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
Thallium, Total	ND	C	mg/L	0.0011	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Vanadium, Total	ND	C	mg/L	0.0022	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1
Zinc, Total	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 13:05	AHI	5/17/21 02:01	MSA	E1

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID: **3171154006**
Sample ID: **CWMP008W**

Date Collected: 4/21/2021 12:56 Matrix: Ground Water
Date Received: 4/21/2021 14:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND	C	mg/L	0.0056	SW846 6020A	4/25/21 18:00	SXC	5/12/21 17:08	MO	D
FIELD PARAMETERS										
Depth to Water Level	2.62	C	Feet		Field			4/21/21 12:56	BGS	F
Elev Top MW Casing above MSL	422.30	C	Feet		Field			4/21/21 12:56	BGS	F
Flow Rate	1.03	C	gal/min		Field			4/21/21 12:56	BGS	F
Ground Water Elevation	419.68	C	ft/MSL		Field			4/21/21 12:56	BGS	F
pH, Field (SM4500B)	6.22	C	pH_Units		Field			4/21/21 12:56	BGS	F
Sample Depth	19.00	C	Feet		Field			4/21/21 12:56	BGS	F
Specific Conductance, Field	1149	C	umhos/cm	1	Field			4/21/21 12:56	BGS	F
Temperature	12.02	C	Deg. C		Field			4/21/21 12:56	BGS	F
Total Well Depth	22.80	C	Feet		Field			4/21/21 12:56	BGS	F
Volume in Water Column	3.23	C	Gallons		Field			4/21/21 12:56	BGS	F
Water Level After Purge	14.47	C	Feet		Field			4/21/21 12:56	BGS	F
Well Volumes Purged	6.38	C	Vol		Field			4/21/21 12:56	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3171154001	1	CWMP017S	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154001	2	CWMP017S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171154002	1	CWMP018S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171154002	2	CWMP018S	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154003	1	CWMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171154003	2	CWMP016W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154004	1	CWMP010W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171154004	2	CWMP010W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154005	1	CWMP009W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154005	2	CWMP009W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3171154006	1	CWMP008W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3171154006	2	CWMP008W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3171154001	CWMP017S	ASTM D6919-09		
3171154001	CWMP017S	EPA 300.0		
3171154001	CWMP017S	EPA 410.4		
3171154001	CWMP017S	Field		
3171154001	CWMP017S	Lib Search VOC		
3171154001	CWMP017S	S2540C-11		
3171154001	CWMP017S	S4500HB-11		
3171154001	CWMP017S	SM2130B-2011		
3171154001	CWMP017S	SM2320B-2011		
3171154001	CWMP017S	SM2510B-2011		
3171154001	CWMP017S	SM5310B-2011		
3171154001	CWMP017S	SW846 6020A	SW846 3015	
3171154001	CWMP017S	SW846 7470A	SW846 7470A	
3171154001	CWMP017S	SW846 8260B		
3171154001	CWMP017S	SW846 9066	420.4/9066	
3171154002	CWMP018S	ASTM D6919-09		
3171154002	CWMP018S	EPA 300.0		
3171154002	CWMP018S	EPA 410.4		
3171154002	CWMP018S	Field		
3171154002	CWMP018S	Lib Search VOC		
3171154002	CWMP018S	S2540C-11		
3171154002	CWMP018S	S4500HB-11		
3171154002	CWMP018S	SM2130B-2011		
3171154002	CWMP018S	SM2320B-2011		
3171154002	CWMP018S	SM2510B-2011		
3171154002	CWMP018S	SM5310B-2011		
3171154002	CWMP018S	SW846 6020A	SW846 3015	
3171154002	CWMP018S	SW846 7470A	SW846 7470A	
3171154002	CWMP018S	SW846 8260B		
3171154002	CWMP018S	SW846 9066	420.4/9066	
3171154003	CWMP016W	ASTM D6919-09		
3171154003	CWMP016W	EPA 300.0		
3171154003	CWMP016W	EPA 410.4		
3171154003	CWMP016W	Field		
3171154003	CWMP016W	Lib Search VOC		
3171154003	CWMP016W	S2540C-11		
3171154003	CWMP016W	S4500HB-11		
3171154003	CWMP016W	SM2130B-2011		
3171154003	CWMP016W	SM2320B-2011		
3171154003	CWMP016W	SM2510B-2011		
3171154003	CWMP016W	SM5310B-2011		
3171154003	CWMP016W	SW846 6020A	SW846 3015	
3171154003	CWMP016W	SW846 7470A	SW846 7470A	
3171154003	CWMP016W	SW846 8260B		
3171154003	CWMP016W	SW846 9066	420.4/9066	
3171154004	CWMP010W	ASTM D6919-09		

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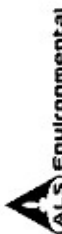
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3171154 2ND QTR 2021 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3171154004	CWMP010W	EPA 300.0		
3171154004	CWMP010W	EPA 410.4		
3171154004	CWMP010W	Field		
3171154004	CWMP010W	Lib Search VOC		
3171154004	CWMP010W	S2540C-11		
3171154004	CWMP010W	S4500HB-11		
3171154004	CWMP010W	SM2130B-2011		
3171154004	CWMP010W	SM2320B-2011		
3171154004	CWMP010W	SM2510B-2011		
3171154004	CWMP010W	SM5310B-2011		
3171154004	CWMP010W	SW846 6020A	SW846 3015	
3171154004	CWMP010W	SW846 7470A	SW846 7470A	
3171154004	CWMP010W	SW846 8260B		
3171154004	CWMP010W	SW846 9066	420.4/9066	
3171154005	CWMP009W	ASTM D6919-09		
3171154005	CWMP009W	EPA 300.0		
3171154005	CWMP009W	EPA 410.4		
3171154005	CWMP009W	Field		
3171154005	CWMP009W	Lib Search VOC		
3171154005	CWMP009W	S2540C-11		
3171154005	CWMP009W	S4500HB-11		
3171154005	CWMP009W	SM2130B-2011		
3171154005	CWMP009W	SM2320B-2011		
3171154005	CWMP009W	SM2510B-2011		
3171154005	CWMP009W	SM5310B-2011		
3171154005	CWMP009W	SW846 6020A	SW846 3015	
3171154005	CWMP009W	SW846 7470A	SW846 7470A	
3171154005	CWMP009W	SW846 8260B		
3171154005	CWMP009W	SW846 9066	420.4/9066	
3171154006	CWMP008W	ASTM D6919-09		
3171154006	CWMP008W	EPA 300.0		
3171154006	CWMP008W	EPA 410.4		
3171154006	CWMP008W	Field		
3171154006	CWMP008W	Lib Search VOC		
3171154006	CWMP008W	S2540C-11		
3171154006	CWMP008W	S4500HB-11		
3171154006	CWMP008W	SM2130B-2011		
3171154006	CWMP008W	SM2320B-2011		
3171154006	CWMP008W	SM2510B-2011		
3171154006	CWMP008W	SM5310B-2011		
3171154006	CWMP008W	SW846 6020A	SW846 3015	
3171154006	CWMP008W	SW846 7470A	SW846 7470A	
3171154006	CWMP008W	SW846 8260B		
3171154006	CWMP008W	SW846 9066	420.4/9066	

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at Dogwood Lane • Netherdown, Pk. 17957 • Phone 717-246-5541 • Fax 717-412-1420 • www.dogwoodlane.com

201 Fillion Mill Rd • Middleborough MA 01705 • 717 944 5841 • Fax: 717 944 1430

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Dan Brown
 Phone#: (717) 735-0193
 Project Name#: Creswell/GWMP Form 19A
 Bill To: Lancaster County Solid Waste MA

☒	Normal-Standard TAT is 10-12 business days.
☐	Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____
 Email? ☒ -Y dbrown@LCSWMA.org
 Fax? ☒ -Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
--	-------------	------

. CWMP017S	04/21/21	1019
. CWMP018S	04/21/21	1041
. CWMP016W	04/21/21	1119
. CWMP010W	04/21/21	1146
. CWMP009W	04/21/21	1219
CWMP008W	04/21/21	1250

Project Comments:	
LOGGED BY:	
REVIEWED BY:	

Relinquished By / Company Name	Date
REGINA ALF	9-21-21

G=Grab; C=Composite

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**

Generated by ALS

COC #	ALS C
1	1
2	2
3	3
4	4
5	5
6	6
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100	100



3171154

1 of 1

Container Type	AG	AN	CG	PL	PL	PL	PL
Container Size	40 ml	125 ml	40 ml	1 L	500 ml	500 ml	500 ml
Representative	HCl	H ₂ SO ₄	HCl	None	None	H ₂ SO ₄	HNO ₃

ANALYSES/METHOD REQUESTED

Enter Number of Containers Per Sample or Field Results Below	
Matrix	
TOC	
O-OH	
8260 VOCs - Form 19A + Subtitle D + TICS	
pH, Cl, SpC, F, SO ₄ , NO ₃ , Tb, TDS	
Alkalinity, HCO ₃	
FM	
Sample Depth for AUX Data	
NH ₃ -N, COD	
Diss Metals Form 19A (Field Filtered)	
Total Metals Form 19A + Subtitle D	

[illegible]

Signature: (signature): 11/14/55-2 CMG	Time	Received By / Company Name	Date	Time	Data Deliverables ☐ Stand ☐ CLP-III ☐ USAC ☐	Reportable to PA Yes ☐ PWSID # EDDS: Format Type
	4		4/21/21	1455		
	6					
	8					
	10					

Air - A=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SI=Sludge; SO=Soil; WP=Wipe; V=Vapor

RONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

ALS

Monday, May 17, 2021 10:48:20 PM

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301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

3171154

Sample Receipt Form

Client: Lancaster County S.W. Work Order #: 3171154

Lancaster County Solid Waste
Authority

BBO

Date: 04/22/21

1. Were airbills / tracking numbers present and recorded?.....	NONE	YES	<u>NO</u>
Tracking-number: _____			
2. Are Custody Seals on shipping containers intact?.....	NONE	YES	<u>NO</u>
3. Are Custody Seals on sample containers intact?.....	NONE	YES	<u>NO</u>
4. Is there a COC (Chain-of-Custody) present?.....		<u>YES</u>	<u>NO</u>
5. Are the COC and bottle labels complete, legible and in agreement?.....		<u>YES</u>	<u>NO</u>
5a. Does the COC contain sample locations?.....		<u>YES</u>	<u>NO</u>
5b. Does the COC contain date and time of sample collection for all samples?.....		<u>YES</u>	<u>NO</u>
5c. Does the COC contain sample collectors name?.....		<u>YES</u>	<u>NO</u>
5d. Does the COC note the type(s) of preservation for all bottles?.....		<u>YES</u>	<u>NO</u>
5e. Does the COC note the number of bottles submitted for each sample?.....		<u>YES</u>	<u>NO</u>
5f. Does the COC note the type of sample, composite or grab?.....		<u>YES</u>	<u>NO</u>
5g. Does the COC note the matrix of the sample(s)?.....		<u>YES</u>	<u>NO</u>
6. Are all aqueous samples requiring preservation preserved correctly?.....	N/A	<u>YES</u>	<u>NO</u>
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....		<u>YES</u>	<u>NO</u>
8. Are all samples within holding times for the requested analyses?.....		<u>YES</u>	<u>NO</u>
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....		<u>YES</u>	<u>NO</u>
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....	N/A	<u>YES</u>	<u>NO</u>
11. Were the samples received on ice?.....		<u>YES</u>	<u>NO</u>
12. Were sample temperatures measured at 0.0-6.0°C.....		<u>YES</u>	<u>NO</u>
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.....		<u>YES</u>	<u>NO</u>
13a. Are the samples required for SDWA compliance reporting?.....	<u>N/A</u>	<u>YES</u>	<u>NO</u>
13b. Did the client provide a SDWA PWS ID#?.....	<u>N/A</u>	<u>YES</u>	<u>NO</u>
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....	<u>N/A</u>	<u>YES</u>	<u>NO</u>
13d. Did the client provide the SDWA sample location ID/Description?.....	<u>N/A</u>	<u>YES</u>	<u>NO</u>
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....	<u>N/A</u>	<u>YES</u>	<u>NO</u>

Cooler #: _____

Temperature (°C): 8-C

Thermometer ID: 574

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis