TETRA TECH, INC.

May 19, 2020

Mr. Shawn Kohtz
City of Bozeman
P.O. Box 1230
Bozeman, Montana 59771-1230

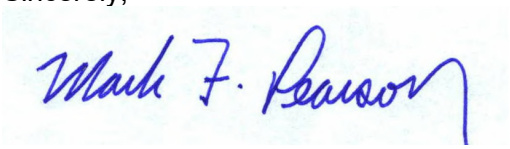
RE: Report of Groundwater Monitoring Activities – December 2019
Bozeman Landfill, Bozeman, Montana

Dear Mr. Kohtz,

Please find the attached report of Groundwater Monitoring Activities conducted in December 2019. A copy of the report on compact disk, has been forwarded to Montana Dept. of Environmental Quality - Solid Waste Program.

We appreciate the opportunity to provide environmental services to the City of Bozeman. Thank you.

Sincerely,



Mark F. Pearson
Project Hydrogeologist

mfp

Enclosure: Report of Groundwater Monitoring Activities – December 2019

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REPORT OF GROUNDWATER MONITORING ACTIVITIES
DECEMBER 2019

BOZEMAN LANDFILL
BOZEMAN, MONTANA

Prepared for:

Mr. Shawn Kohtz, P.E.
City of Bozeman
PO Box 1230
Bozeman MT 59771-1230

Prepared by:

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Tetra Tech Project No. 114-710326E

May 19, 2020

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1.0 INTRODUCTION

Tetra Tech conducted groundwater monitoring activities in December 2019 at the Bozeman Landfill and site vicinity (**Figure 1**). This monitoring event addressed the semi-annual monitoring requirement of the existing and additional monitoring wells and stations. Semi-annual monitoring events are typically conducted in early summer (typically June) and early winter (late November or early December). Tetra Tech personnel conducted this monitoring event and reporting in accordance with *Task Order, 2019 - 2020 Groundwater and Perimeter Methane Monitoring, Assessment of System Performance and Effectiveness* dated February 25, 2019 (approved by City of Bozeman on October 7, 2019), and the *Groundwater Sampling and Analysis Plan* dated November 12, 2015.

Methods of monitoring activities are presented in Section 2.0. Figures presenting site location, monitoring sites, selected analytical results, and other site aspects are attached. Data tables are also attached. Graphs of selected groundwater data over time in several wells are contained in **Appendix A**. Groundwater sampling logs and field notes are contained in **Appendix B**. Laboratory analytical reports are contained in **Appendix C**. A *Data Review, Verification, & Validation Report* for the December 2019 sample set is contained in **Appendix D** and the statistical evaluation data and worksheets are contained in **Appendix E**.

2.0 METHODS

This section describes methods used to monitor groundwater at the Bozeman Landfill. The groundwater sampling event and groundwater level measurements occurred between December 2 and 4, 2019. Groundwater level measurements were also conducted on December 5, 2019, in two monitoring wells that were not sampled.

A schedule of field measurements and laboratory analyses for the December 2019 monitoring event is presented in **Table 1**. The schedule for this and future semi-annual monitoring events had been approved by the Montana Department of Environmental Quality (DEQ) on April 8, 2015.

Monitoring activities also included the measurement of water levels and field parameters, purging and sampling of wells, sampling of one water supply well and a surface water spring (McIlhattan Seep). Samples were submitted for laboratory analysis. The location of monitoring sites is shown in **Figure 2**.

2.1 WATER LEVEL AND FIELD PARAMETER MEASUREMENTS

Water levels were measured from a designated point on the north quadrant of the polyvinyl chloride (PVC) collar of each monitoring well. Depth to water measurements are also expressed as being below top of casing (btoc). An electric well probe was used for water level measurements and routinely decontaminated before use at each monitoring well. Other field parameters including temperature, pH, specific conductivity, dissolved oxygen (DO, measured in milligrams per liter), and oxidation reduction potential (ORP, measured in millivolts) were measured. A YSI®-556 multimeter with a 20-meter cable was used to measure the field parameters. Field parameters were measured in grab samples collected from the monitoring wells during purging, in purge water during pumping of wells, and/or downhole in most of the wells following purging and sampling with a bailer. In the case of McIlhattan Seep (spring), the

multiprobe was completely submersed in the spring flow at the sampling location. The measurements were recorded on the groundwater sampling logs contained in **Appendix B**.

2.2 GROUNDWATER SAMPLING

Water samples were collected from each monitoring well or monitoring site in accordance with the *Groundwater Monitoring Sampling and Analysis Plan* for the site. In general, the following sampling procedures were used:

- Monitoring wells were purged using either dedicated submersible pump(s) and tubing, decontaminated submersible pumps with disposable tubing, or dedicated and/or disposable polyethylene bailers.

- A minimum of three well casing volumes were removed in wells that had suitable recovery, with the objective of sampling "formation" water. In wells with poor recovery, an effort was made to purge to a casing water column that was less than the length of a bailer and then allow the well to recover for sampling and field parameter measurement. Exceptions to purging three casing volumes are noted in the sampling logs.

- In most wells monitored, one measurement of field parameters was conducted per each casing volume removed from the well.

- Samples collected for laboratory analysis were transferred into appropriate labeled containers and preserved, as necessary.

- Pertinent information (sample date, time, well location, personnel, etc.) was recorded on groundwater monitoring logs (**Appendix B**).

- Samples were packed in ice-filled coolers and shipped with chain-of-custody forms to Pace Analytical Services, Inc., in Minneapolis, Minnesota. Chain-of-custody forms for the sampling event are included with the laboratory report in **Appendix C**.

- Monitoring activities at the McIlhattan Seep (**Figure 2**) consisted of filling a disposable bailer for filtering for metals analysis and directly filling the sample bottles where the spring begins flowing at ground surface.

Samples were collected from the 27 sites along with five quality assurance/quality control samples. Samples were analyzed for volatile organic compounds (VOCs) in accordance with method 8260B MSV (Low Level) and selected samples were analyzed for 15 dissolved metals, chloride and sulfate, and nitrogen (as NO_2 + NO_3). In addition, the method 8260 list of constituents, continued to be analyzed for 58 constituents for the purpose of including all constituents analyzed in previous residential indoor air monitoring (in the adjacent residential development). Analytical methods are described in the laboratory analytical report (**Appendix C**).

Pace Analytical Services, Inc. (Pace) was contracted to furnish the sample containers, trip blanks, and conduct the analysis of the water samples. For the monitoring event, two trip blanks (TRIP BLANK 1 and TRIP BLANK 2) were prepared in Pace's Billings, Montana laboratory and consisted of de-ionized water. Upon Pace's receipt of the samples in each monitoring event, the trip blanks were analyzed for VOCs (in accordance with Method 8260 MSV Low Level) listed in Appendix I to 40 CFR Part 258 contained in ARM 17.50.1306(7), including dichlorodifluoromethane. Three duplicate samples were collected. Each duplicate sample was

collected at the same time the natural sample was collected, from each well. Wells with duplicate samples included MW-13 (DUP 1), MW-6 (DUP 2), and LF-3 (DUP 3). The duplicate samples were analyzed for the same constituents as the corresponding natural sample.

The December 2019 monitoring event field parameter measurements and laboratory analytical results have been entered into Tetra Tech's project groundwater database. A statistical analysis was performed to include the December 2019 monitoring event, on selected constituents and wells to determine statistical significance. This analysis included the examination of water quality data in point of compliance (POC) wells MW-6 and MW-8A compared with water quality data in monitoring wells immediately upgradient of the Unlined Closed Cell, wells MW-5 and MW-15.

3.0 DATA PRESENTATION AND ANALYSIS

Data collected at the Bozeman Landfill during the December 2019 monitoring event is summarized in this section. Figures and tables cited in the report are presented at the end of the text. Charts detailing selected constituent concentrations and groundwater levels over time are presented in **Appendix A**. The field groundwater monitoring logs are contained in **Appendix B**. The laboratory analytical report and the chain-of-custody document for the monitoring event is contained in **Appendix C**.

3.1 GROUNDWATER OCCURRENCE AND MOVEMENT

The results of monitoring of site monitoring wells and other monitoring stations during December 2019 is summarized in this section.

Site Depth to Groundwater and Seasonal Variation

During the December 2019 monitoring event, depth to groundwater (in the stations monitored) ranged between approximately 2.1 feet below the top of well casing (btoc) in well MW-10 near the western margin of the site, 14 feet btoc in wells LF-2 and LF-3, 56 feet btoc in well MW-12, and 112 feet btoc in well MW-5 at the eastern margin of the site.

Seasonal variation of groundwater elevations from June to (late November or) December since 2010 has been an average of -0.5 foot in well MW-10, -0.2 foot in wells LF-2 and LF-3, -0.3 foot in wells MW-11 and MW-12, respectively; and -0.1 foot in well MW-5.

Groundwater levels/elevations are presented in **Table 2**. **Chart A-1** (in **Appendix A**) depict the change and trend in groundwater levels since 1994 in three monitoring wells across the site. Groundwater elevations in site wells had experienced an overall decline since 2011 and 2012. Groundwater elevations in site wells have been increasing since 2017.

Site Groundwater Flow Direction and Hydraulic Gradient

The December 2019 groundwater elevations at the landfill were generally consistent with groundwater elevations measured in previous monitoring events and indicate a southwest groundwater flow beneath the Unlined Closed Cell shifting to a west-southwest flow between the *Lined Closed Cell* and well MW-10, at the western margin of the site. A groundwater contour map was prepared using the December 2019 groundwater measurements and is presented in **Figure 3**.

Groundwater gradients beneath the *Unlined Closed Cell* were a consistent 5.5% between wells MW-15 and MW-12. The groundwater gradient decreased, between wells MW-12 and LF-2, to approximately 1.4%. The groundwater gradient, between wells MW-24 and MW-27, was approximately 2%. Groundwater flow directions and gradients are consistent with previous monitoring events.

In addition to calculated hydraulic gradients described above, the measurement of groundwater elevations in monitoring wells confirmed the following vertical groundwater gradients at the site:

MW-6 and 6B — Groundwater elevation in well MW-6B continues to be a minimum of 10 feet higher than in well MW-6 indicating a distinct upward hydraulic gradient between groundwater at screened depths (below ground surface) of approximately 41 to 56 feet (MW-6) and 90 to 100 feet (MW-6B).

MW-7A and 7B — Groundwater elevations are within 0.02 foot in wells MW-7A and MW-7B indicating no distinct upward or downward gradients in groundwater to approximately 74 feet depth (below ground surface).

MW-8A, 8B, and 8C — Consistent with previous monitoring events, the groundwater elevation in well MW-8C continues to be several feet higher than in well MW-8A indicating a distinct upward hydraulic gradient at depths greater than approximately 70 feet. The elevation difference during the December 2019 event was 3.9 feet. Groundwater elevations in wells MW-8A and 8B during December 2019 were the same, indicating no distinct upward or downward gradients in groundwater to approximately 70 feet depth.

MW-9A and 9B — Consistent with previous monitoring events, groundwater elevations were within 0.04 foot in wells MW-9A and 9B indicating no distinct upward or downward gradients in groundwater to approximately 57 feet depth.

3.2 GROUNDWATER QUALITY

A discussion of the December 2019 results regarding analyses of inorganic constituents and VOCs is presented in the following sections. The discussion compares constituent concentrations with the Groundwater Protection Standard (GPS). The GPS is the concentration of constituent(s) in site upgradient wells MW-5 and MW-15. Alternatively, the GPS may also be equal to the United States Environmental Protection Agency (USEPA) regulatory levels or Maximum Contaminant Level (MCL) and/or the Montana Numeric Water Quality Human Health Standard (HHS).

3.2.1 Organic Constituents

The VOC analysis (8260B MSV Low Level method) includes the analysis of 58 constituents (**Appendix C**). Sixteen VOC constituents were detected during the December 2019 monitoring event and included the same constituents detected in previous monitoring events. A summary of detected VOCs, at each site, is presented in **Table 3**, and a historical summary of selected VOCs is presented in **Table 4**. **Figures 4** through **7** present the locations of detections of benzene, tetrachloroethene, trichloroethene, and vinyl chloride during this monitoring event.

The Montana HHS and USEPA MCL for tetrachloroethene and methylene chloride is 5 µg/L. The Montana HHS for vinyl chloride is 0.2 µg/L (with the annotation Health Advisory or HA). The

USEPA MCL for vinyl chloride is 2 µg/L. Wells or sampling stations with exceedances to the MCL and/or Montana HHS in December 2019, include the following:

- Wells MW-17, MW-20, and the Shop Well had concentrations of tetrachloroethene measured between 5.8 and 8.9 micrograms per liter (µg/L).

- Wells MW-6, MW-7A, MW-12, MW-13, MW-17, and MW-18 had vinyl chloride concentrations measured between 0.30 and 10.2 µg/L.

- Well MW-17 had a methylene chloride concentration of 12.3 µg/L. Well MW-17 was the only sampling station where methylene chloride was detected during the December 2019 monitoring event.

Evaluation of VOC results generally indicate detections of the same VOC constituents as in previous monitoring events. Trend charts for selected monitoring wells are presented in **Appendix A** (**Charts A-2** to **A-6**). These charts present selected VOC constituent concentration changes through time, both before and after start-up of the first landfill gas (LFG) extraction system and the following upgraded LFG extraction system. No discussion has been provided in regard to these charts. However, a more detailed analysis of VOC trends regarding operation of the remediation systems has been presented in Tetra Tech's 2018/2019 Remediation System Evaluation Report (dated March 11,2020).

3.2.2 Inorganic Constituents

Samples for metals analysis were collected from 15 wells during this monitoring event. The analysis includes 15 metals. Analytical results indicated that the concentrations of metals in groundwater at the site did not exceed USEPA MCL or Montana HHS and have not exceeded regulatory standards in past monitoring events. The December 2019 results are consistent with previous monitoring results. Monitoring stations where metal constituents were higher than the analytical practical quantitation limit (PQL) or of note are listed below:

- Wells MW-12, and MW-18 have had the highest arsenic and iron concentrations as in previous monitoring events. In the December 2019 event, arsenic was of similar concentration, with previous monitoring events, and highest in wells MW-12 and MW-18 (0.0023 and 0.0078 milligrams per liter (mg/L), respectively). Iron was highest in wells MW-12 and MW-18 (3.5 and 3.7 mg/L, respectively).

- Barium concentrations are similar with previous monitoring events and ranged between 0.029 and 0.15 mg/L in the wells sampled.

- Well MW-13 had the highest cadmium concentration (maximum of 0.00019 mg/L) in the December 2019 event. The remainder of wells sampled had cadmium concentrations either estimated (between the PQL and MDL) or below the MDL (non-detect). In previous monitoring events, cadmium concentrations had been highest in wells MW-7A, MW-9A, and MW-20.

- Manganese was highest in wells MW-12, MW-13, and MW-18 (maximum of 10.5 mg/L). This is consistent with previous monitoring events.

- Lead was either at estimated concentrations or below MDLs in all the wells sampled. Well MW-12 had the only estimated concentration of 0.00005 mg/L. This is consistent with previous monitoring events.

- Arsenic was highest in wells MW-12 and MW-18 (maximum of 0.0078 mg/L). This is consistent with previous monitoring events.

- Silver and thallium were either at laboratory estimated concentrations or below MDLs in all the wells sampled. This is consistent with previous monitoring events.

- Copper, chromium, cobalt, nickel, selenium, vanadium, and zinc concentrations were similar with previous events. Copper, chromium, cobalt, and vanadium did not exceed 0.017 mg/L, individually. Nickel and selenium did not exceed 0.027 mg/L, individually. Zinc did not exceed 0.0057 mg/L.

Other inorganic constituent concentrations are noted below in wells sampled for sulfate, chloride, and nitrate + nitrite as N. Sulfate and chloride were analyzed in samples collected from 13 wells. Monitoring stations where these constituents were of note are listed below:

- The highest sulfate concentration was in well MW-20 at 50.5 mg/L. This is consistent with previous monitoring results. Wells with sulfate concentrations greater than 30 mg/L are MW-8A, MW-12, MW-17, MW-20, and MW-27.

- The highest chloride concentration was in well MW-18 at 281 mg/L. This is consistent with previous monitoring results. Wells with chloride concentrations greater than 40 mg/L are MW-8A, MW-13, MW-17, and MW-18.

Samples for nitrogen analysis (as NO_2 + NO_3) were collected from 14 wells and the McIlhattan Seep during this monitoring event. Concentrations of nitrate + nitrite are summarized below:

- The concentration of nitrogen in well MW-8A (17 mg/L) exceeded the regulatory standard of 10 mg/L. Nitrogen concentrations increased from 3 mg/L in 2007 to 19.5 mg/L in 2011. This was followed by a decrease to 7 mg/L in 2015 to 2017. Between 2017 and December 2019, nitrogen concentrations have increased to 17 mg/L.

- Other wells with nitrogen concentrations greater than 5 mg/L in December 2019, include wells MW-11, MW-27, and the McIlhattan Seep.

- Background nitrate + nitrite as N concentrations (in wells MW-5 and MW-15) were an average of 4.4 mg/L.

4.0 DATA VALIDATION

The data validation indicates that the December 2019 analytical results are valid, reliable, and qualified for interpretive use. Details of the data validation process are described below.

The data validation process is used to determine the adequacy and quality of the December 2019 laboratory analytical data at the Bozeman Landfill. The objective of the data validation is to identify any unreliable or invalid laboratory measurements and qualify that data for interpretive use. These validations were performed in accordance with Tetra Tech's Groundwater Monitoring

Sampling and Analysis Plan (2015) and guidelines prepared by the USEPA (1999, 2004, and 2017). This section also summarizes the Data Review, Verification, & Validation Report for the December 2019 sample set that was prepared for this monitoring report. This report is contained in **Appendix D** and is, in part, summarized below.

4.1 FIELD QA/QC

Analytical results were evaluated using three field duplicate samples and two trip blank samples. The QA/QC sampling and results are discussed below.

Field Duplicates

Duplicate samples (labeled DUP1, DUP2, and DUP3) were collected from wells MW-13 (DUP1), MW-6 (DUP2), and LF-3 (DUP3) during the December 2019 monitoring event. These duplicates were shipped with the natural samples to Pace Analytical Services, Inc., in Minneapolis, Minnesota for analysis of VOCs and inorganic constituents.

Field duplicate results aid in the assessment of sampling and analytical precision. Analytical results for the natural and duplicate samples collected were evaluated using the following criteria:

- The Relative Percent Difference (RPD) between the two samples is calculated when both values of the natural/duplicate pair are greater than five times the PQL for a given analyte.

- The Absolute Value Difference (AVD) between the natural and duplicate sample for a given analyte is calculated when one or both values are less than five times the PQL.

RPDs are calculated by dividing the difference between the two reported values for a given constituent by the average of the two reported values. Analytical results of constituents where the RPD was greater than 20 percent are considered estimated concentrations.

AVDs are calculated by subtracting the results of the two reported values for a given constituent. If the difference exceeds the PQL, then results for this constituent are considered estimated.

Results of comparison of field duplicates with their natural samples indicated the following:

<u>DUP1 and MW-13 Samples</u>

- The RPD was calculated for six constituents but did not exceed 20%.

- AVDs were calculated for five constituents but their differences did not exceed the PQLs.

<u>DUP2 and MW-6 Samples</u>

- The RPD was calculated for eight constituents but did not exceed 20%.

- AVDs were calculated for four constituents but their differences did not exceed the PQLs.

<u>DUP3 and LF-3 Samples</u>

- The RPD was calculated for ten constituents but did not exceed 20%.

- AVDs were calculated for three constituents but their differences did not exceed the PQLs.

Trip Blanks

Two trip blanks were provided and analyzed by Pace for the monitoring event. The trip blanks were submitted with the sample shipment to Pace in December 2019. The samples were analyzed for VOCs (Method 8260B).

Each trip blank consists of deionized water containerized by the laboratory, shipped to Tetra Tech's Bozeman, Montana, office with the sample containers. These trip blanks were kept in field coolers during sampling and shipped back to the laboratory with the samples upon conclusion of the field activities. Analytical results of the trip blank sample were reviewed to determine if any constituent was measured in the sample at detectable concentrations. Analytical results indicated no detections of VOCs above the MDL. Therefore, no qualification is required of any of the VOC constituent results in the natural sample set due to trip blank VOC detections.

4.2 LABORATORY QA/QC

Pace Analytical received groundwater samples collected from the City of Bozeman Landfill on December 5, 2019. Chain-of-custody documents accompanied the samples from collection to receipt at the laboratory. All samples were properly preserved and analyzed within the respective holding time for each analyte (unless otherwise noted on the report via a qualifier). More information is provided in the Data Review, Verification, & Validation Report contained in **Appendix D**.

Review of all other laboratory quality assurance indicators showed all inorganic and organic analyses followed published quality assurance/quality control (QA/QC) criteria and within the laboratory precision and accuracy guidelines. Laboratory QA/QC issues are listed in the laboratory report and mostly pertain to matrix spikes, method blanks, and lab duplicates. The Pace laboratory report indicates that calibration standards had been used, calibration verification had been conducted, laboratory controls were in place and analyzed, laboratory duplicates were used, and laboratory spikes documented.

5.0 STATISTICAL ANALYSIS OF WATER QUALITY DATA

The City completed the first of two corrective measures assessments for the Bozeman Landfill in November 1995. A landfill gas extraction system was installed as the preferred alternative in the first corrective measures assessment and has been operated at the site from December 1997 (Maxim, 2000) to July 2016. A second corrective measure began operation in August 2016 and is currently in operation. This corrective measure consists of an expanded landfill gas extraction and leachate collection system, a soil vapor extraction system, and a groundwater and vadose zone air injection system as described in Tetra Tech's Construction Completion Report (March 2018).

According to ARM 17.50.1310(5)(b), remedies selected because of the corrective measures assessment, are considered complete when concentrations of all constituents listed in ARM 17.50.1307 have not exceeded the GPS for a period of three consecutive years based on statistical analysis of the data.

As indicated in the discussion above, there are VOCs that exceed regulatory standards at the site. Of those constituents listed in ARM 17.50.1307, the following constituents have equaled or

exceeded regulatory standards at the Bozeman Landfill on at least a single occasion in the last seven years (inclusive of December 2013):

- Tetrachloroethene
- Trichloroethene
- Methylene Chloride
- Vinyl Chloride
- Nitrate+Nitrite as N

These constituents were evaluated to determine which are present at statistically significant concentrations above the GPS. In addition, methylene chloride has been detected in well MW-17, above the USEPA MCL/Montana HHS, since August 2018. Due to the methylene chloride results, this constituent was included in this statistical evaluation to determine if the results are statistically significant relative to the regulatory level of 5 µg/L. Selection and description of the statistical tests employed are described below, as are the results.

As in previous statistical evaluations, results from two POC wells MW-6 and MW-8A downgradient of the *Unlined Closed Cell* were evaluated. The locations of these wells are shown in **Figure 2**. Wells MW-5 and MW-15 are upgradient of the Unlined Closed Cell and are considered to represent background groundwater quality conditions.

5.1 STATISTICAL ANALYSIS APPROACH

In accordance with ARM 17.50.1307, the statistical analysis was conducted in three steps:

Step 1 - Comparison of median constituent concentrations in samples collected from background wells (MW-5 and MW-15) and POC wells (MW-6 and MW-8A) for the last three years or inclusive of December 2017 through December 2019.

Step 2 - Statistical analysis of constituents in samples collected from the POC wells that have a higher concentration than samples collected from the background wells. In addition, the statistical analysis was conducted on constituents that have exceeded regulatory standards in the last seven years (inclusive of December 2013 to December 2019) to determine if there is a statistically significant increase over background values.

Step 3 - Statistical examination of trends of those constituents that have exceeded the GPS in the last seven years (inclusive of December 2013 to December 2019) and if they are significantly greater than the GPS or in the case of methylene chloride in well MW-17, significantly greater than the regulatory level.

Selection and description of the statistical tests employed are described below, as are the results.

5.2 STATISTICAL TEST SELECTION

Most data in this statistical analysis exhibit non-normal distributions for which non-parametric techniques are appropriate (USEPA, 1992). The demonstration of normality is a three-step process:

- Selection of all data sets with 20 or more data points;
- From the above selection, select those data sets with less than 10 percent non-detected data points; and
- Comparison of the appropriate statistic to a table of critical values at the 95 percent confidence level for all qualified data sets.

In the third step of this process, any result in the project analytical database or **Table 4** between the practical quantitation limit (PQL) or reporting limit (RL) and the minimum detection limit (MDL) is used in the analysis. This includes the December 2019 data. Results between the PQL and MDL are typically flagged with a "J" to indicate estimated concentration.

Any value below the MDL is flagged with a "U". Results less than the MDL are considered to be equal to half the MDL. This is in accordance with U.S. EPA guidelines (U.S. EPA 1992). Only data sets meeting all three of the above criteria (three-step process) are considered normally distributed in this analysis.

Of the constituents in the December 2019 monitoring that had sufficient sample sizes to test for normality, none exhibited a normal distribution. Hence, where the proportion of non-detects allow, non-parametric techniques were employed. The 1-sample Wilcoxon test is used as the non-parametric equivalent to a parametric confidence interval test (Helsel and Hirsch, 1992).

5.3 STATISTICAL METHODS

A confidence interval approach is used to compare constituent concentrations in POC wells and other wells where the GPS is exceeded. This approach is recommended by USEPA (1989 and 1992) and endorsed by Gibbons, the author of *Statistical Methods for Groundwater Monitoring* (1994). Historical data for the constituents that have equaled or exceeded their GPS on at least a single occasion since 2005 were tested for statistical significance with respect to the GPS using two methods:

- Non-parametric 1-sample Wilcoxon test.
- Parametric 1-sample t-test.

Hypothesis tests, interpretation of results, and data requirements for each of the statistical methods used are discussed below.

5.3.1 Non-Parametric 1-Sample Wilcoxon Test

This test is a special case of the signed-rank test used to compare the median difference between paired observations. In this case, the paired observations are constituent concentrations in the POC wells versus the GPS. The null hypothesis is that there is no difference. The alternative hypothesis is that the median of the comparison well is greater than the GPS. A resulting p-value is used to test the significance of the test. The large sample approximation to the test was utilized for sample sets of more than 15 data points. The exact test was used for data sets of seven to 15 observations when the large sample approximation resulted in a p-value less than 0.15. In these instances, p-values were determined from tabulated quantiles for the reported Wilcoxon statistic and sample size. A p-value less than or equal to 0.01 indicates that a significant difference exists at the 99 percent confidence level (Helsel and Hirsch, 1992). (See discussion below regarding clarification of results of the Wilcoxon tests on MW-6 and MW-7A vinyl chloride data paired to the USEPA regulatory standard and/or the Montana HHS).

A minimum of seven data points is required to employ this non-parametric test at a 99 percent confidence level (U.S. EPA, 1989). As previously mentioned, 2 µg/L was considered the GPS for vinyl chloride in the December 2019 monitoring (except for MW-6 and MW-7A which were evaluated in consideration of the Montana HHS of 0.2 µg/L). Non-detect data with a reported PQL above the GPS were discarded in order to avoid misleading results. Also, for non-detect data equal to the GPS, concentration levels were reduced to just below the standard to maintain relative ranking among data.

With regard to recent history of vinyl chloride detections in well MW-6, vinyl chloride exceeded the USEPA regulatory standard or GPS (2 µg/L) in one monitoring event conducted in November 2018. Vinyl chloride in well MW-6 has exceeded the Montana HHS (0.2 µg/L) since December 2009 (**Table 4**). There are 15 valid sample data values with no flags since December 2012. Evaluation of the 15 sample data sets from December 2012 to December 2019 indicated, with a p-value of 0.0008, a difference between the GPS and the 15 valid sample data values for well MW-6. However, the difference was because well MW-6 vinyl chloride results are lower than the USEPA regulatory level. Evaluation of the 15 sample data sets indicated, with a p-value of 0.0007, a significant difference between well MW-6 vinyl chloride values and the Montana HHS.

With regard to the concentration of vinyl chloride in well MW-7A, there were 14 data sets with no flags (U) since December 2012. As with MW-6, these data sets were evaluated against the USEPA MCL and the Montana HHS. With a p-value of 0.0010, the test indicated a significant difference between well MW-7A vinyl chloride values and the USEPA MCL for vinyl chloride. However, the difference is because well MW-7A vinyl chloride values are lower than the USEPA MCL. With a p-value of 0.0219, the test indicated no significant difference between well MW-7A vinyl chloride values and the Montana HHS.

5.3.2 Parametric 1-Sample t-Test

This test is used to compare the mean difference between paired observations when normality can be demonstrated in the data set. As with the non-parametric case, the paired observations are constituent concentrations in the POC wells versus the GPS. The null hypothesis is that there is no difference. The alternative hypothesis is that the mean of the comparison well is greater than the GPS. A resulting p-value is used to evaluate the significance of the test. A p-value less than or equal to 0.01 indicates a significant difference exists at the 99 percent confidence level (Helsel and Hirsch, 1992).

As mentioned in the statistical analysis section of previous monitoring reports, water quality data are not normally distributed without mathematical transformation. For those data sets that do not demonstrate normality, a log transformation often applies adequately to water quality data (Helsel and Hirsch 1992) and is also applied to the data sets in this analysis. The test for normality is then performed on the log transformed data. In sample sets containing non-detect data, values one-half the reported MDL (in un-transformed units) are used to replace non-detect data.

5.4 RESULTS AND DISCUSSION

The progression of the statistics calculations was described as Steps 1 through 3 in Section 5.1. Results of statistical analyses are discussed below and summarized in **Tables 5** and **6**. The results from statistical analysis including descriptive statistics, data plots, and test results are contained in **Appendix E**.

Step 1
A comparison of medians between the upgradient wells and POC wells was conducted for the last three years of data (since December 2017). Results of the three-year comparison of medians between background and POC wells indicated that the following constituents were significantly different (higher) in (one or more) POC wells (MW-6 and MW-8A):

Metals
- Barium – MW-6 & MW-8A
- Chromium – MW-8A
- Copper – MW-8A
- Nickel – MW-6 & MW-8A
- Selenium – MW-8A
- Zinc – MW-8A

VOCs
- 1,1 dichloroethane – MW-6
- cis 1,2 dichloroethene - MW-6 & MW-8A
- Tetrachloroethene - MW-6 & MW-8A
- Trichloroethene - MW-6
- Vinyl Chloride - MW-6

Nitrogen, Chloride, and Sulfate
- Chloride and Sulfate - MW-6 & MW-8A
- N as NO_2+NO_3 - MW-8A

Step 2
A comparison of medians between the upgradient wells and POC wells was conducted for the last seven years of data (approximately 15 data points, although up to 20 data points could be used), and results of the Mann-Whitney U test are presented in **Table 5**. Plots and calculations supporting **Table 5** are contained in **Appendix E**. These results indicated that the following constituents, in the December 2019 monitoring event, were above background concentrations in one or more POC wells:

- 1,1 dichloroethane
- cis 1,2 dichloroethene
- Tetrachloroethene
- Trichloroethene
- Vinyl Chloride
- N as NO_2+NO_3

In previous reporting; barium, nickel, and selenium were excluded from this Step 2 calculation. Barium concentrations in the POC wells has consistently exceeded the background wells, however, DEQ had allowed the omission of statistics calculations for barium. Chromium, copper, nickel and selenium have occasionally exceeded background well concentrations in the POC wells and remained at concentrations below the USEPA GPS or Montana HHS.

Step 3
Eight statistical tests were performed using the 1-sample Wilcoxon method at the 99 percent confidence level. Results are presented in **Table 6**.

Tetrachloroethene in the POC well MW-6 was evaluated using the Montana HHS of 0.2 µg/L versus the USEPA MCL of 2 µg/L based on 15 data points that determined the presence of vinyl chloride above the laboratory MDL. The statistics for vinyl chloride in MW-6 indicates that it is statistically present above background (wells MW-5 and MW-15) concentrations and is also statistically greater than the Montana HHS of 0.2 µg/L. This conclusion is reflected in **Table 6**.
In consideration of vinyl chloride concentrations in well MW-7A, statistics were conducted using both the USEPA MCL of 2 µg/L and the Montana HHS of 0.2 µg/L. The reasons for this are the following:

- Both data sets exceed 12 valid data points.
- The MW-7A data set incorporating a PQL of 0.2 µg/L is valid with respect to conducting statistical calculations (see **Table 4**).
- Sample data for vinyl chloride in well MW-7A is generally observed to exceed the Montana HHS value of 0.2 µg/L data sets included in the statistical calculations.

Analysis of vinyl chloride in well MW-7A indicates that vinyl chloride concentrations are statistically different from the U.S. EPA MCL of 2 µg/L. Although there is a statistical difference, the analysis of the MW-7A results shows that the difference is because there is a statistically lower value of vinyl chloride in the sample concentrations. The result is that vinyl chloride is not statistically greater than the 2 µg/L MCL in this well. With regard to the Montana HHS of 0.2 µg/L for vinyl chloride in well MW-7A, the concentrations are not statistically different. While the sample data for vinyl chloride is generally observed to exceed the Montana HHS, the difference was not statistically significant. Tetrachloroethene in well MW-7A is not statistically different from the USEPA MCL of 5 µg/L at the 99 percent confidence level.

Analysis of vinyl chloride in wells MW-12 and MW-13 indicates that they are statistically different and statistically greater than the USEPA MCL of 2 µg/L, at the 99 percent confidence level. This correlates with review of previous vinyl chloride results for these wells. Vinyl chloride has been detected in wells MW-7A, MW-12, and MW-13 since the 1990s.

Trichloroethene in well MW-12 does exhibit concentrations that are statistically different from the GPS at the 99 percent confidence level. Although there is a statistical difference, the analysis of the MW-12 results shows that the difference is because there is a statistically lower value of trichloroethene in the sample concentrations. In addition, trichloroethene, in well MW-12, has exhibited a negative trend over time, indicating a decline in trichloroethene concentrations in this well. The result is that trichloroethene is not statistically greater than the USEPA MCL/Montana HHS of 5 µg/L value. The null hypothesis that there was no significant difference was accepted for all other constituents at the 99 percent confidence level.

Statistics calculations indicate that nitrate + nitrite as N in well MW-8A is statistically different from the background concentrations. However, Nitrate + nitrite as N, in well MW-8A, is not statistically greater than the USEPA GPS of 10 mg/L.

Analysis of methylene chloride in well MW-17, in regard to the USEPA MCL and Montana HHS of 5 µg/L, indicates that methylene chloride concentrations are not statistically different. While sample data has exceeded the Montana HHS since August 2018, the analysis showed that this increase is not a statistically significant difference.

6.0 SUMMARY

The following summarizes data, calculations, and interpretations resulting from the December 2019 groundwater monitoring event at the Bozeman Landfill:

- During the December 2019 monitoring event, the range in depth to first interception of groundwater (in monitoring wells) was between 2.1 feet btoc in well MW-10 near the western margin of the site and 112 feet btoc in well MW-5 at the eastern margin of the site.

- The December 2019 groundwater elevations at the landfill were generally consistent with groundwater elevations measured in previous monitoring events and indicate a southwest groundwater flow beneath the *Unlined Closed Cell*. In the west and south portion of the site (vicinity of wells MW-4 and MW-27), groundwater flow shifts to a west-southwest direction.

- Sixteen VOC constituents were detected during the December 2019 monitoring event and included the same constituents detected in previous groundwater monitoring events at the site. Wells or sampling stations with exceedances to the USEPA regulatory levels and/or Montana HHS include wells MW-17, MW-20, and the Shop Well with concentrations of tetrachloroethene measured between 5.8 and 8.9 µg/L, respectively; and wells MW-6, MW-7A, MW-12, MW-13, MW-17, and MW-18 with vinyl chloride concentrations between 0.30 µg/L and 10.2 µg/L. In addition, well MW-17 had a methylene chloride concentration of 12.3 µg/L.

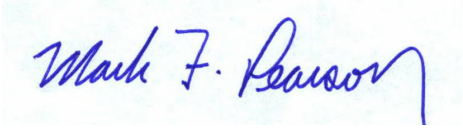
- The three-year comparison of medians between background and POC wells indicated that six metals; five VOCs; and nitrogen, chloride, and sulfate were significantly different (higher) in (one or more) POC wells (MW-6 and MW-8A). These include concentrations of 1,1 dichloroethane, cis 1,2 dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, and nitrogen.

- The concentration of vinyl chloride in wells MW-12 and MW-13 is statistically greater than the USEPA MCL of 2 µg/L from December 2012 to December 2019. The concentration of vinyl chloride in well MW-6 is statistically greater than the Montana HHS of 0.2 µg/L from December 2012 to December 2019. The concentration of vinyl chloride in MW-7A is not statistically greater than the Montana HHS of 0.2 µg/L from December 2012 to December 2019.

- Statistics calculations indicate that nitrate + nitrite as N in well MW-8A is statistically different from the background concentrations but not statistically greater than the USEPA MCL of 10 mg/L. Nitrogen concentrations have fluctuated, in this well, between 3 mg/L and 19.5 mg/L since 2007. Downgradient monitoring well nitrogen concentrations have never exceeded the USEPA MCL.

- Statistics calculations indicate that methylene chloride in well MW-17 is not statistically greater than the USEPA MCL/Montana HHS of 5 µg/L. Methylene chloride in well MW-17 has exceeded the regulatory standards since August 2018. The December 2019 concentration of methylene chloride in well MW-17 was 12.3 µg/L.

Prepared by:



Mark F. Pearson
Project Hydrogeologist

Preparation of Statistics and Review by:

Caitlin Fleming, P.E.
Project Engineer

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ONLINE REFERENCE:

U.S. EPA Maximum Contaminant Levels
http://water.epa.gov/drink/contaminants/

Montana DEQ Solid Waste Program Laws and Rules:
http://www.deq.mt.gov/SolidWaste/LawsRules.mcpx

FIGURES

TABLES

APPENDIX A
GROUNDWATER DATA OVER TIME

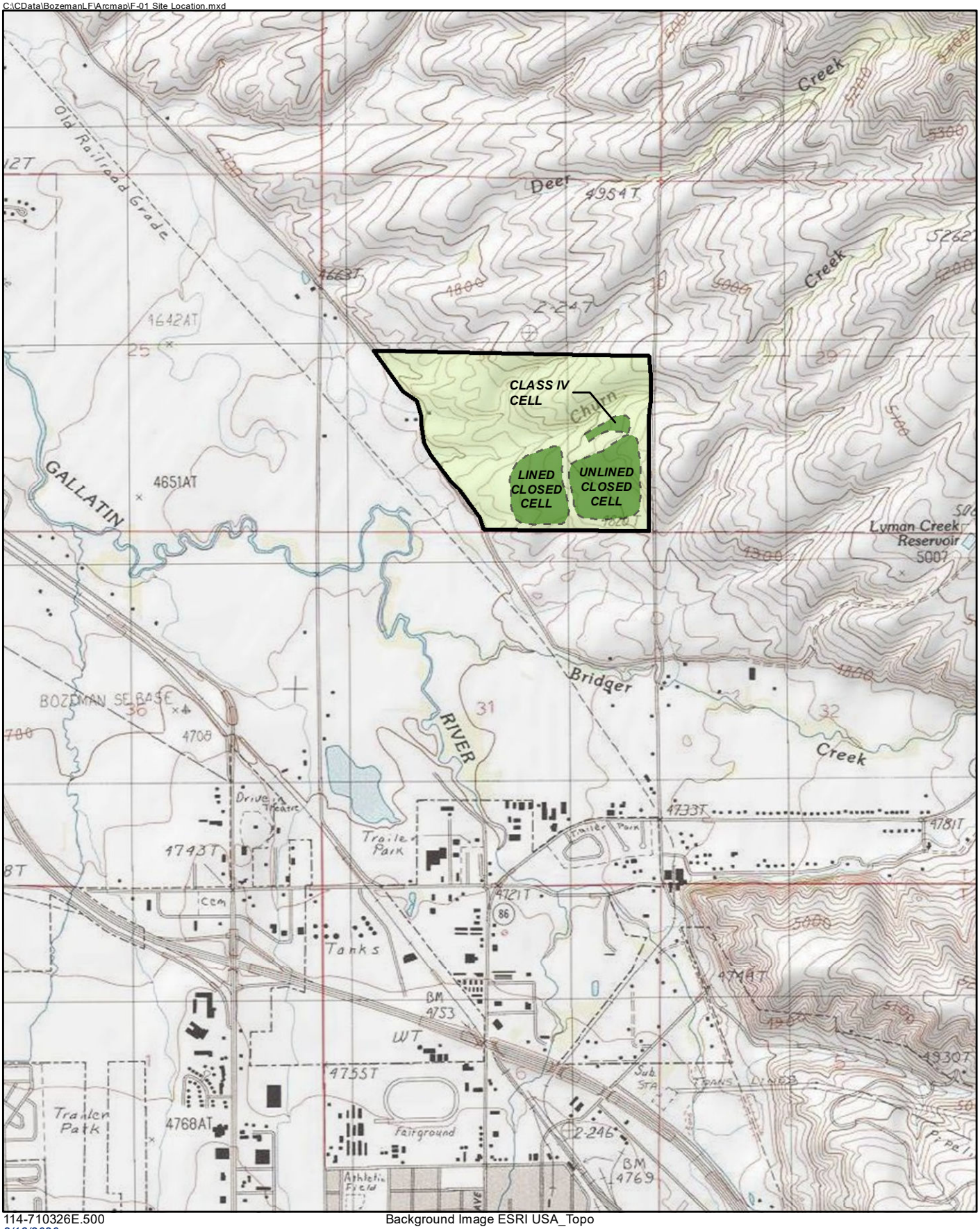
APPENDIX B
SAMPLING LOGS AND FIELD NOTES

APPENDIX C
LABORATORY ANALYTICAL REPORTS

APPENDIX D
STATISTICAL EVALUATION DATA AND WORKSHEETS

FIGURES

C:\CData\BozemanLF\Arcmap\F-01 Site Location.mxd



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2/13/2020

Background Image ESRI USA_Topo

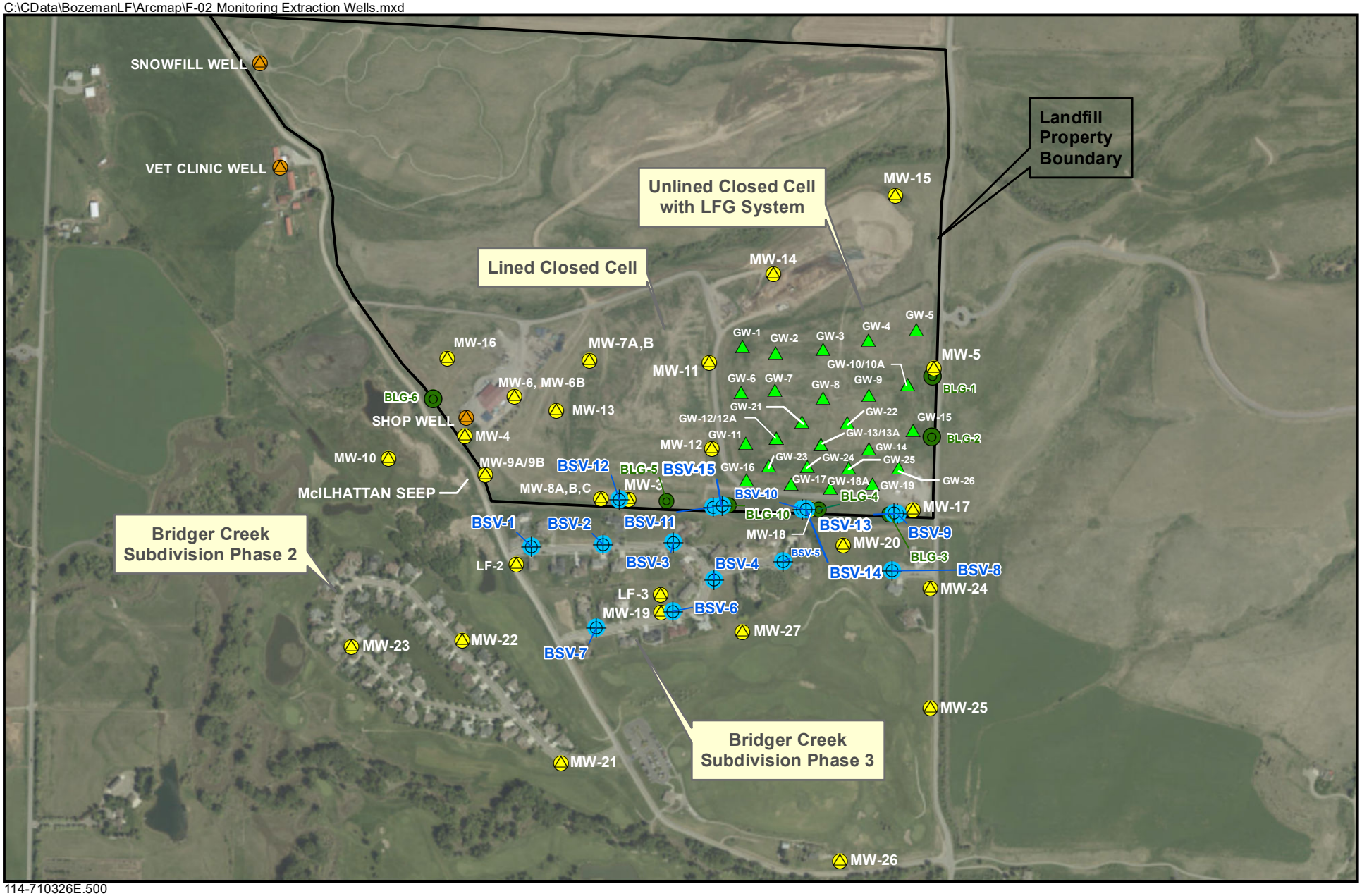
N

Miles

0 0.5

Figure 1
Site Location Map
Bozeman Landfill
Bozeman, Montana

C:\CData\BozemanLF\Arcmap\F-02 Monitoring Extraction Wells.mxd



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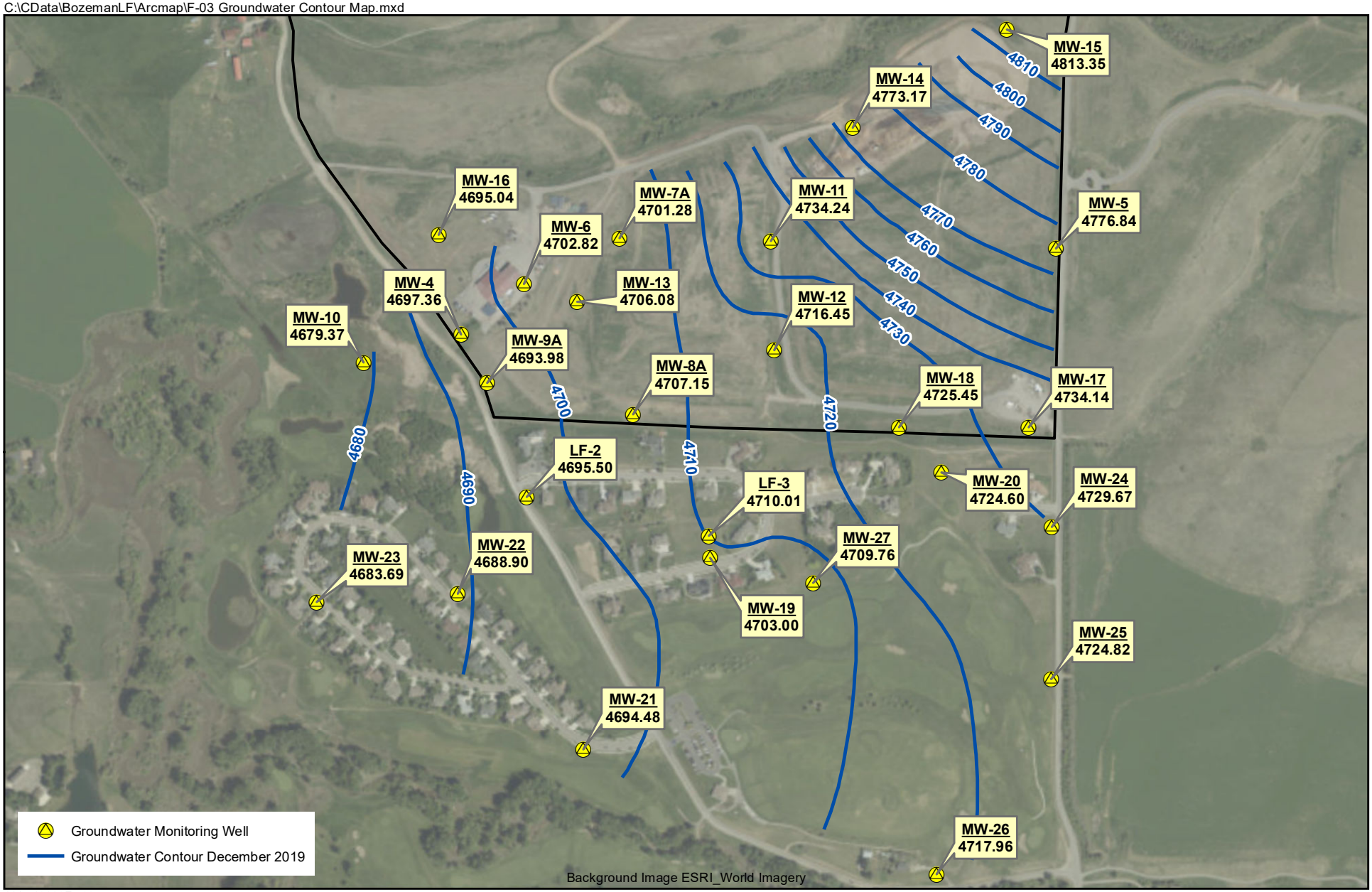
N
W E
S
0 300 600
Feet

- Soil Gas Probe
- Groundwater Monitoring Well
- Water Supply Well
- Methane Monitoring Well
- Landfill Gas (LFG) Extraction Well

Site Plan with Monitoring Stations and Extraction Wells
Bozeman Landfill
Bozeman, Montana
FIGURE 2

C:\CData\BozemanLF\Arcmap\F-03 Groundwater Contour Map.mxd



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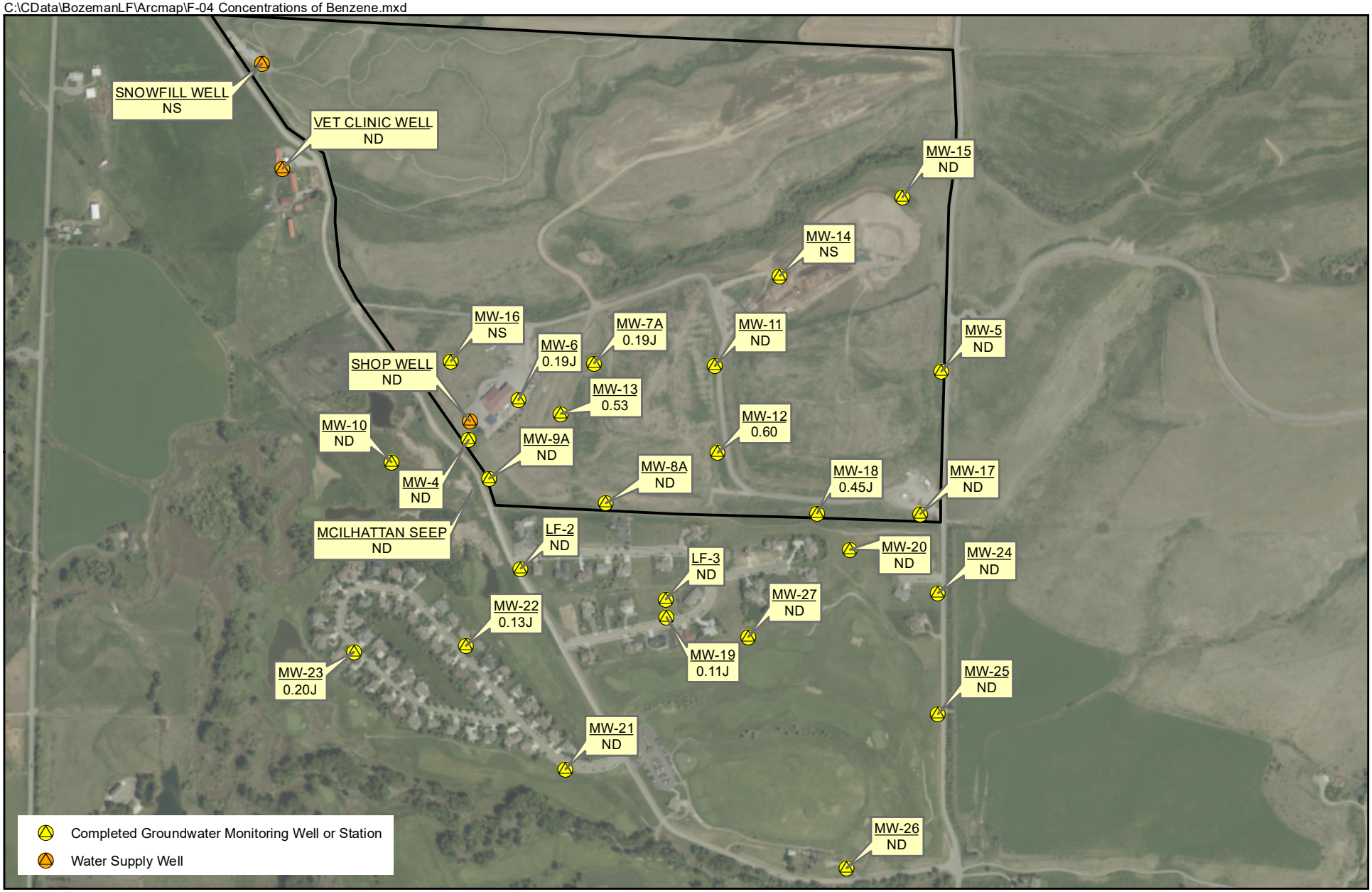
Feet

NOTE:
All well locations are approximate.
Only those wells used for preparation of groundwater contour map are shown

December 2019
Groundwater Contour Map
Bozeman Landfill
Bozeman, Montana
FIGURE 3

C:\CData\BozemanLF\Arcmap\F-04 Concentrations of Benzene.mxd



114-710326E.500
2/13/2020

N
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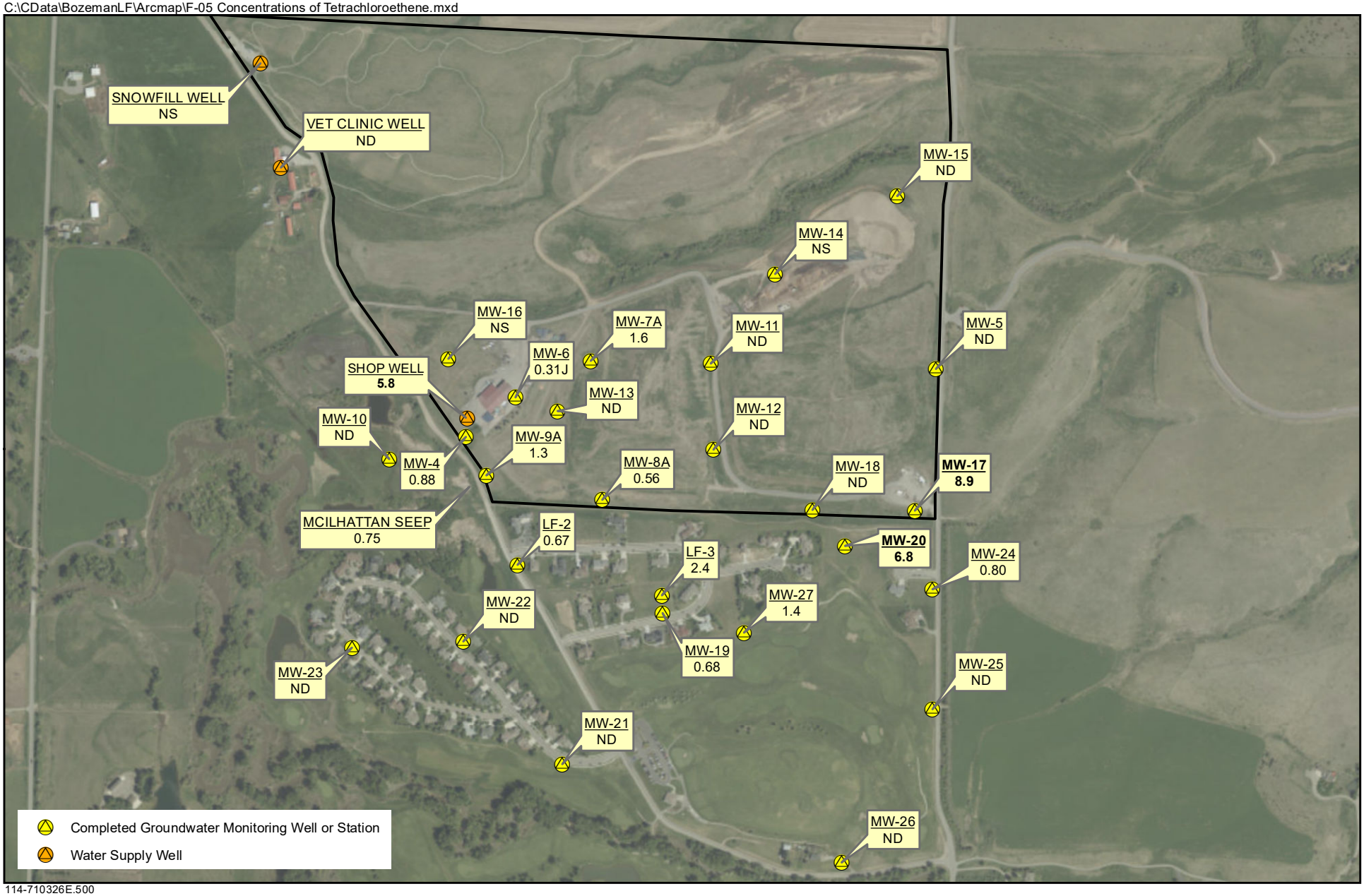
0 300 600
Feet

NOTE:
All well locations are approximate
December 2019 Benzene Concentration
J: Indicates Estimated Concentration (less than analytical practical quantitation limit)
Concentration in micrograms per liter
ND: Not Detected Above Minimum Detection Limit
NS: Not Sampled
Bolded concentrations of constituent indicate exceedance of groundwater protection standard

Concentrations of Benzene in
December 2019
Bozeman Landfill
Bozeman, Montana
FIGURE 4

C:\CData\BozemanLF\Arcmap\F-05 Concentrations of Tetrachloroethene.mxd



114-710326E.500
2/13/2020

N
W
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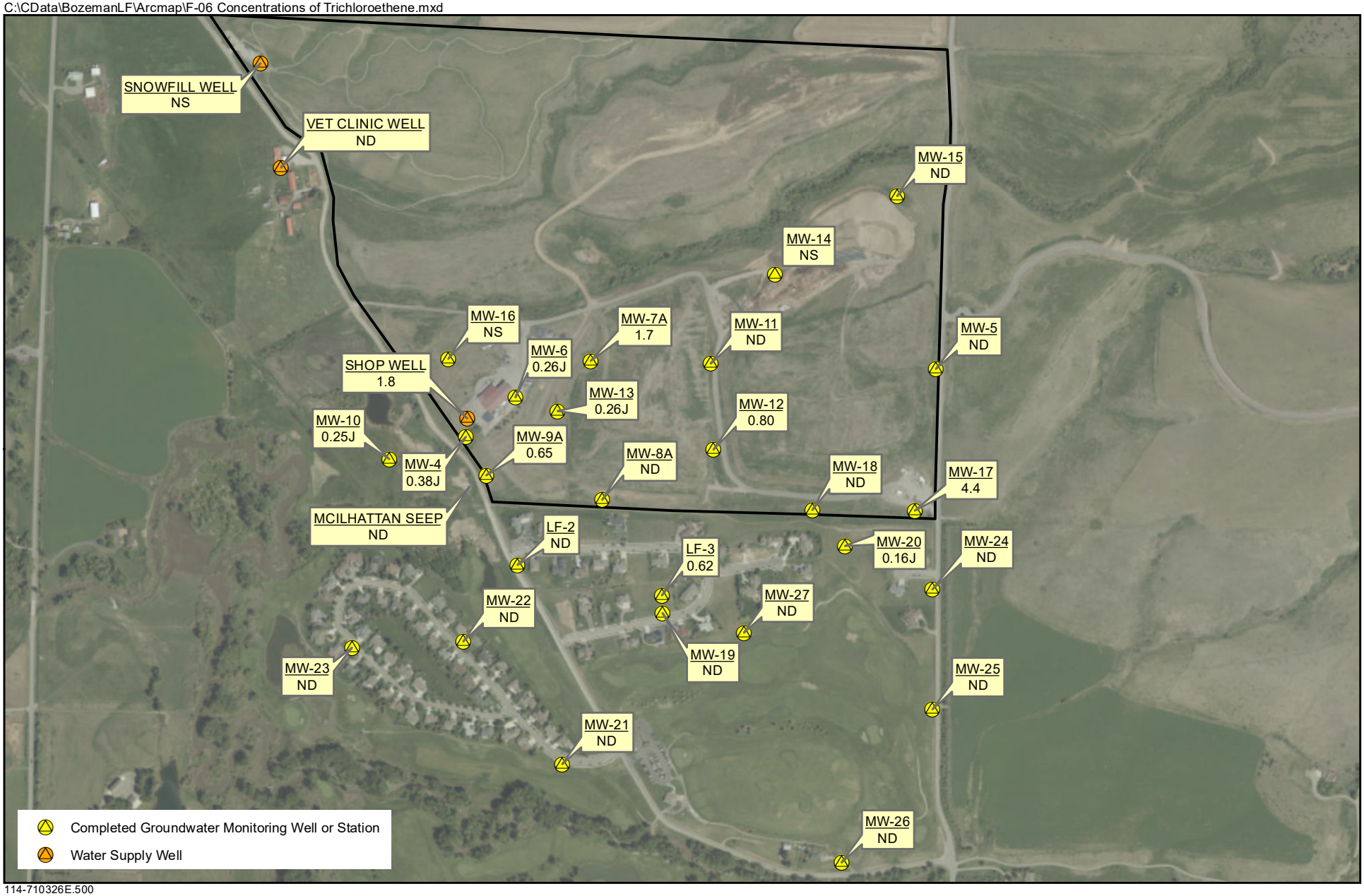
S
0 300 600
Feet

NOTE:
All well locations are approximate
December 2019 Tetrachloroethene Concentration
J: Indicates Estimated Concentration (less than analytical practical quantitation limit)
Concentration in micrograms per liter
ND: Not Detected Above Minimum Detection Limit
NS: Not Sampled
Bolded concentrations of constituent indicate exceedance of groundwater protection standard

Concentrations of Tetrachloroethene in
December 2019
Bozeman Landfill
Bozeman, Montana
FIGURE 5

C:\CData\BozemanLF\Arcmap\F-06 Concentrations of Trichloroethene.mxd



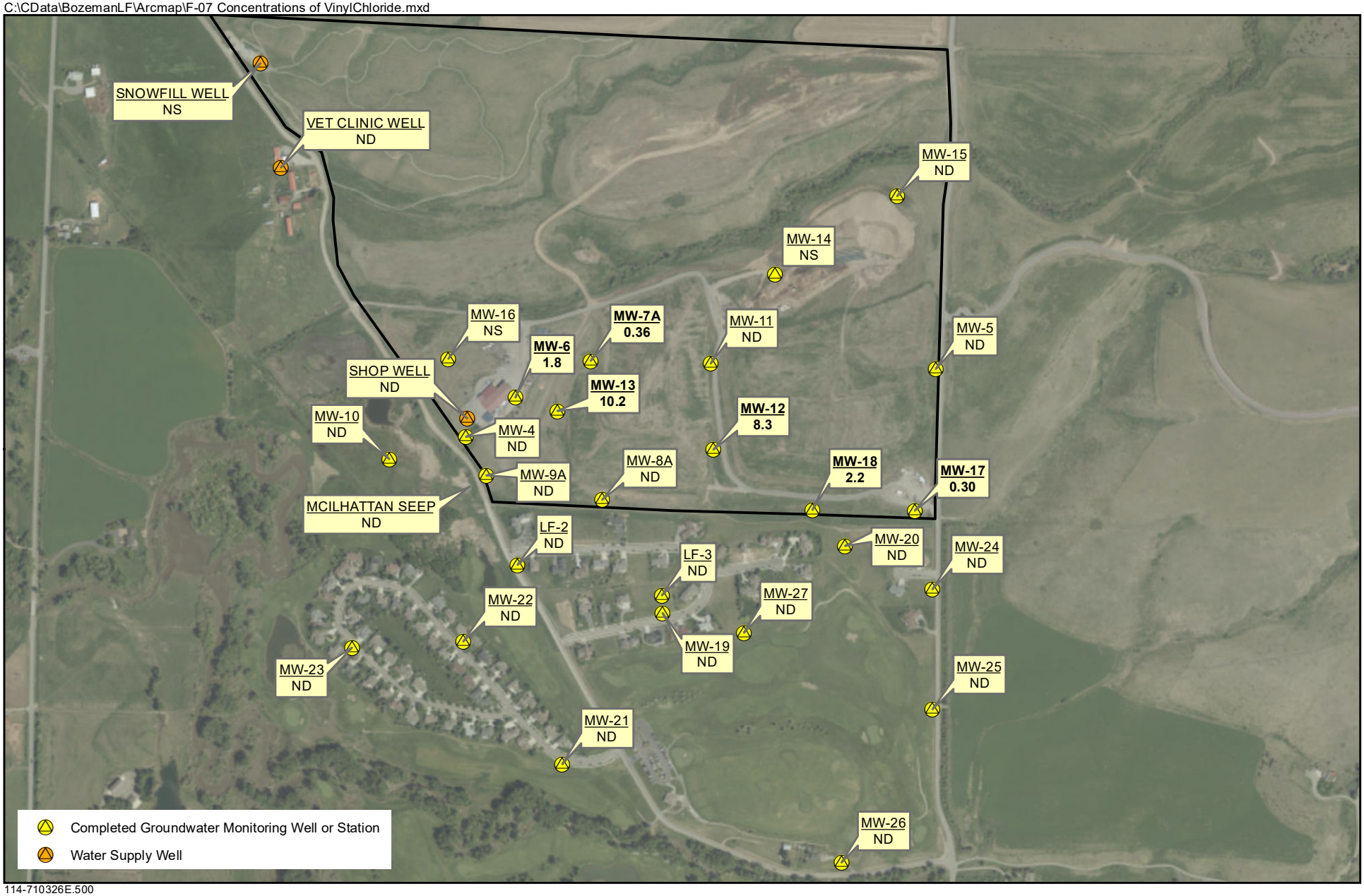
114-710326E.500
2/13/2020

N
W
E
S
0 300 600
Feet

NOTE:
All well locations are approximate
December 2019 Trichloroethene Concentration
J: Indicates Estimated Concentration (less than analytical practical quantitation limit)
Concentration in micrograms per liter
ND: Not Detected Above Minimum Detection Limit
NS: Not Sampled
Bolded concentrations of constituent indicate exceedance of groundwater protection standard

Concentrations of Trichloroethene in
December 2019
Bozeman Landfill
Bozeman, Montana
FIGURE 6

C:\CData\BozemanLF\Arcmap\F-07 Concentrations of VinylChloride.mxd



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2/13/2020

N
W E
S
0 300 600
Feet

NOTE:
All well locations are approximate
December 2019 Vinyl Chloride Concentration
J: Indicates Estimated Concentration (less than analytical practical quantitation limit)
Concentration in micrograms per liter
ND: Not Detected Above Minimum Detection Limit
NS: Not Sampled
Bolded concentrations of constituent indicate exceedance of groundwater protection standard

Concentrations of Vinyl Chloride in
December 2019
Bozeman Landfill
Bozeman, Montana
FIGURE 7

TABLES

TABLE 1
December 2019 Monitoring Event - Schedule of Field Measurements and Laboratory Analysis
Bozeman Landfill, Bozeman Montana

Well or Sampling Site	Existing Monitoring Frequency	DEQ Approved Change	Approximate Depth to Groundwater (below TOC)	Total Depth of Well	December							
					Water Level Measure-ment	Field pH, SC, DO & ORP	VOCs	'Full List' Metals (dissolved)	Cations	Anions Sulfate Chloride	TDS & Total Hardness	N as NO2+NO3
LF- 2	Semi-annual monitoring		14.3	19.6	1	1	1					1
LF- 3	Semi-annual monitoring		14.2	37.5	1	1	1	1		1		1
MW- 3	No monitoring requirement. Last event in 2001		49.0	75.0								
MW- 4	Semi-annual monitoring		20.7	38.0	1	1	1	1		1		1
MW- 5 *	Semi-annual monitoring		113.9	160.0	1	1	1	1		1		1
MW- 6 *	Semi-annual monitoring		31.6	56.0	1	1	1	1		1		1
MW- 6B	Four monitoring events completed	Bi-Annual Mon. (next in June 2021)	19.5	99.5	1							
MW- 7A	Semi-annual monitoring		57.0	65.9	1	1	1					1
MW- 7B		Bi-Annual Mon. (next in June 2021)	57.1	75.0	1							
MW- 8A *	Semi-annual monitoring		48.9	56.0	1	1	1	1		1		1
MW- 8B		Bi-Annual Mon. (next in June 2021)	48.2	70.0	1							
MW- 8C	Four monitoring events completed	Bi-Annual Mon. (next in June 2021)	43.6	102.5	1							
MW- 9A	Semi-annual monitoring		28.3	39.0	1	1	1	1		1		1
MW- 9B		Bi-Annual Mon. (next in June 2021)	28.6	54.0	1							
MW- 10	Semi-annual monitoring		2.3	14.5	1	1	1					1
MW- 11	Semi-annual monitoring		51.9	70.0	1	1	1					1
MW- 12	Semi-annual monitoring		56.5	65.8	1	1	1	1		1		1
MW- 13	Semi-annual monitoring		43.8	61.3	1	1	1	1		1		1
MW- 14	Last annual mon conducted Dec 2014	No further monitoring	33.3	46.0	1							
MW- 15 *	Semi-annual monitoring		48.8	72.5	1	1	1	1		1		1
MW- 16	Four monitoring events completed	No further monitoring	26.2	40.0	1							
MW- 17	Four monitoring events completed	Continue monitoring in June and December	76.5	85.0	1	1	1	1		1		
MW- 18	Four monitoring events completed	Continue monitoring in June and December	48.0	59.1	1	1	1	1		1		
MW- 19	Four monitoring events completed	Continue monitoring in June and December	22.2	30.5	1	1	1					
MW- 20	Four monitoring events completed	Continue monitoring in June and December	54.2	65.0	1	1	1	1		1		
MW- 21	Four monitoring events completed	Annual Monitoring	9.8	18.0	1	1	1					
MW- 22	Four monitoring events completed	Annual Monitoring	4.8	17.0	1	1	1					
MW- 23	Four monitoring events completed	Annual Monitoring	6.2	16.0	1	1	1					
MW- 24	Four monitoring events completed	Continue monitoring in June and December	75.7	80.5	1	1	1					
MW- 25	Four monitoring events completed	Bi-Annual Mon. (next in December 2021)	50.7	63.0	1	1	1					
MW- 26	Four monitoring events completed	Bi-Annual Mon. (next in December 2021)	15.0	33.0	1	1	1					
MW- 27	Semi-annual monitoring		19.9	27.0	1	1	1	1		1		1
Shop/Office Well	Semi-annual monitoring	Bi-Annual Mon. (next in December 2021)				1	1					
McIlhattan Seep	Semi-annual monitoring				1	1	1	1				1
Valley View Vet Wel	Semi-annual monitoring				1	1	1	1				
Field Duplicate	Semi-annual monitoring						3	3		3		3
Trip Blank	Semi-annual monitoring						2					
Decon Blank	Semi-annual monitoring						1					

Notes :

Depth to groundwater and total depth are measurements below ground surface

MW-3 depth to groundwater and total depth are measurements below ground surface

* : Point of Compliance Well

VOCs : Volatile organic compounds

Valley View Vet Well will have total recoverable analysis of metals

Wells that will not be sampled or on a reduced schedule

'Full List' : Analysis of 15 metals (reported as dissolved concentrations) including:

arsenic	chromium	iron	selenium	vanadium
barium	cobalt	lead	silver	zinc
cadmium	copper	nickel	thallium	manganese

Total Number of Samples	33	27	33	18	0	16	0	18

TABLE 2
Groundwater Levels
Bozeman Landfill, Bozeman Montana

Revision Date: 2/10/2020 mfp

	MEASURING POINT ELEVATION (in feet above mean sea level)													
	4,709.50		4,723.59		4,759.77		4,717.87		4,888.98		4,734.14		4,732.67	
MPE change	Initial MPE	4702.71	Initial MPE	4717.1	Initial MPE	4751.89	Initial MPE	4710.90	Initial MPE	4882.37	Initial MPE	4738.68	Initial MPE	4727.23
											6/30/1998	4728.69		
	6/4/2014	4709.50	6/4/2014	4723.59	6/4/2014	4759.77	6/4/2014	4717.87	6/4/2014	4888.98	6/4/2014	4734.14	6/4/2014	4732.67
Well No.	LF-2		LF-3		MW-3		MW-4		MW-5		MW-6[1]		MW-6B	
DATE	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
05/86	14.20	4695.30	15.50	4708.09	48.76	4711.01	20.60	4697.27						
10/22/1986	14.53	4694.97	15.20	4708.39	48.87	4710.90	20.64	4697.23						
08/92											45.40	4693.28		
2/24/1993			16.39	4707.20			22.35	4695.52	112.66	4776.32	43.57	4695.11		
7/27/1993	14.52	4694.98	15.10	4708.49	49.91	4709.86	21.73	4696.14	111.60	4777.38	43.35	4695.33		
1/17/1994	14.72	4694.78	14.85	4708.74	49.50	4710.27	20.70	4697.17	110.76	4778.22	43.02	4695.66		
6/27/1994	15.42	4694.08	15.45	4708.14	50.34	4709.43	20.97	4696.90	110.26	4778.72	42.91	4695.77		
2/1/1995	14.43	4695.07	14.72	4708.87	50.41	4709.36	20.67	4697.20	110.71	4778.27	42.88	4695.80		
6/28/1995	14.7	4694.80	14.88	4708.71	50.27	4709.50	20.08	4697.79	110.06	4778.92	42.71	4695.97		
11/28/1995	14.39	4695.11	15.33	4708.26	49.87	4709.90	20.51	4697.36	109.70	4779.28	42.80	4695.88		
6/25/1996	13.68	4695.82	13.92	4709.67	49.30	4710.47	20.78	4697.09	109.50	4779.48	42.55	4696.13		
12/11/1996	14.29	4695.21	14.34	4709.25	48.82	4710.95	20.3	4697.57	110.10	4778.88	44.77	4693.91		
6/19/1997	12.31	4697.19	12.40	4711.19	47.07	4712.70	13.39	4704.48	108.64	4780.34	39.85	4698.83		
12/15/1997	14.16	4695.34	14.00	4709.59	48.02	4711.75	20.37	4697.50	106.71	4782.27	42.73	4695.95		
6/30/1998	13.21	4696.29	12.98	4710.61			19.27	4698.60	106.10	4782.88	30.95	4703.19		
12/14/1998	14.32	4695.18	13.82	4709.77	47.97	4711.80	20.37	4697.50	105.75	4783.23	31.24	4702.90		
6/22/1999	14.07	4695.43	13.53	4710.06	47.74	4712.03	20.25	4697.62	106.01	4782.97	31.13	4703.01		
12/14/1999	14.42	4695.08	14.31	4709.28	48.22	4711.55	20.54	4697.33	106.86	4782.12	31.33	4702.81		
6/8/2000			13.98	4709.61	48.28	4711.49	20.47	4697.40	108.22	4780.76	31.33	4702.81		
11/28/2000	14.53	4694.97	14.23	4709.36	48.77	4711.00	20.69	4697.18	109.69	4779.29	31.53	4702.61		
6/11/2001	14.27	4695.23	13.97	4709.62	48.91	4710.86	20.60	4697.27	110.61	4778.37	31.66	4702.48		
12/17/2001	14.63	4694.87	14.01	4709.58	49.40	4710.37	20.83	4697.04	111.77	4777.21	31.79	4702.35		
6/13/2002	13.31	4696.19	13.66	4709.93	48.59	4711.18	19.72	4698.15	112.47	4776.51	31.59	4702.55		
12/12/2002	14.78	4694.72	14.22	4709.37	49.85	4709.92	20.92	4696.95	113.26	4775.72	31.87	4702.27		
6/10/2003	14.20	4695.30	14.02	4709.57	49.35	4710.42	20.41	4697.46	113.52	4775.46	31.79	4702.35		
12/3/2003	14.92	4694.58	14.35	4709.24	50.32	4709.45	21.02	4696.85	114.30	4774.68	31.96	4702.18		
6/8/2004	14.36	4695.14	14.23	4709.36	50.13	4709.64	20.72	4697.15	114.94	4774.04	31.95	4702.19		
12/6/2004	14.71	4694.79	14.71	4708.88	50.53	4709.24	20.99	4696.88	115.68	4773.30	32.43	4701.71		
6/16/2005	14.13	4695.37	14.13	4709.46	50.05	4709.72	20.57	4697.30	116.01	4772.97	31.92	4702.22		
12/14/2005	14.86	4694.64	14.29	4709.30	50.72	4709.05	20.98	4696.89	116.85	4772.13	32.07	4702.07		
3/16/2006			14.02	4709.57							31.94	4702.20		
6/12/2006	13.95	4695.55	14.85	4708.74			21.80	4696.07	114.39	4774.59	31.90	4702.24		
9/20/2006			14.24	4709.35										
12/6/2006			13.98	4709.61			20.91	4696.96	116.45	4772.53	29.9	4704.24		
3/15/2007			13.22	4710.37							31.55	4702.59		
6/20/2007			13.63	4709.96			18.95	4698.92	115.69	4773.29	31.43	4702.71		
12/10/2007			14.07	4709.52			20.86	4697.01	115.51	4773.47	31.94	4702.20		
6/24/2008			12.74	4710.85			18.92	4698.95	114.88	4774.10	31.19	4702.95		
12/9/2008			13.98	4709.61			20.8	4697.07	114.07	4774.91	33.8	4700.34		
6/2/2009			13.24	4710.35			19.8	4698.07	113.42	4775.56	31.62	4702.52		
12/9/2009			13.87	4709.72			20.6	4697.27	113.03	4775.95	31.78	4702.36		
6/15/2010			12.94	4710.65			19.76	4698.11	112.45	4776.53	31.41	4702.73		
12/1/2010	14.32	4695.18	13.81	4709.78			20.69	4697.18	111.97	4777.01	31.52	4702.62		
6/13/2011	12.73	4696.77	12.66	4710.93			19.29	4698.58	110.63	4778.35	30.99	4703.15		
12/5/2011	14.29	4695.21	13.71	4709.88			20.48	4697.39	110.05	4778.93	31.40	4702.74		
6/5/2012	14.12	4695.38	13.52	4710.07			20.39	4697.48	110.12	4778.86	31.29	4702.85	18.69	4708.54
12/4/2012	14.26	4695.24	13.93	4709.66	49.24	4702.65	20.73	4697.14	111.31	4777.67	31.44	4702.70	19.40	4707.83
6/12/2013	14.05	4695.45	14.33	4709.26			20.69	4697.18	112.36	4776.62	31.47	4702.67	19.25	4707.98
12/18/2013	14.28	4695.22	13.77	4709.82			20.75	4697.12	113.12	4775.86	31.56	4702.58	19.34	4707.89
3/26/2014	13.30	4696.20	13.22	4710.37			19.86	4698.01	113.02	4775.96	31.33	4702.81	19.34	4713.33
8/21/2014	14.24	4695.26	14.23	4709.36			20.70	4697.17	112.85	4776.13	31.52	4702.62	19.41	4713.26
12/8/2014	14.17	4695.33	13.87	4709.72			20.76	4697.11	112.95	4776.03	31.52	4702.62	19.30	4713.37
6/15/2015	14.28	4695.22	14.19	4709.40			20.66	4697.21	113.89	4775.09	31.55	4702.59	19.46	4713.21
12/1/2015	14.31	4695.19	14.00	4709.59			20.82	4697.05	114.89	4774.09	31.65	4702.49	19.55	4713.12
6/15/2016	14.20	4695.30	14.26	4709.33			20.50	4697.37	115.95	4773.03	31.55	4702.59	19.53	4713.14
12/1/2016	14.30	4695.20	13.95	4709.64			20.87	4697.00	116.24	4772.74	31.75	4702.39	19.66	4713.01
6/15/2017	13.57	4695.93	13.44	4710.15			20.03	4697.84	116.10	4772.88	31.42	4702.72	19.13	4713.54
12/1/2017	14.16	4695.34	13.89	4709.70			20.79	4697.08	115.88	4773.10	31.69	4702.45	19.53	4713.14
8/20/2018	14.06	4695.44	14.43	4709.16			20.32	4697.55	114.00	4774.98	31.35	4702.79	19.02	4713.65
11/27/2018	14.11	4695.39	13.84	4709.75			20.66	4697.21	113.12	4775.86	31.42	4702.72	18.94	4713.73
6/12/2019	13.34	4696.16	13.54	4710.05			19.91	4697.96	112.30	4776.68	31.11	4703.03	18.27	4714.40
12/3/2019	14.00	4695.50	13.58	4710.01			20.51	4697.36	112.14	4776.84	31.32	4702.82	15.68	4716.99

MPE change : Measuring point elevation change

DTW : Depth to water below measuring point (feet) N.M. Not measured Blank cell denotes no data

ELEV : Groundwater elevation above mean sea level (feet). Most recent MPE measurement used. Well locations shown on Figure 2.

1 : 9.99 feet of PVC was removed on 06/30/1998. Used 6/4/2014 Collar Elevation from this time point on.

TABLE 2 (Continued)
Groundwater Levels
Bozeman Landfill, Bozeman Montana

	MEASURING POINT ELEVATION (in feet above mean sea level)													
	4764.64		4764.71		4754.58		4754.84		4753.98		4722.11		4722.32	
MPE change	Initial MPE	4755.51	Initial MPE	4755.52	Initial MPE	4748.22	Initial MPE	4747.98	Initial MPE	4747.63	Initial MPE	4715.27	Initial MPE	4715.50
	7/6/2011	4757.87	7/6/2011	4757.95			7/3/2012	4748.47						
	6/4/2014	4764.64	6/4/2014	4764.71	6/4/2014	4754.58	6/4/2014	4754.84	6/4/2014	4753.98	6/4/2014	4722.11	6/4/2014	4722.32
Well No.	MW-7A[2]		MW-7B[2]		MW-8A		MW-8B		MW-8C		MW-9A		MW-9B	
DATE	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
08/92	55.50	4700.01			46.90	4707.68	48.50	4706.83			27.75	4694.36		
2/24/1993	55.11	4700.40	55.25	4700.27	48.81	4705.77	48.96	4706.37			29.66	4692.45	29.97	4692.35
7/27/1993	54.35	4701.16	54.55	4700.97	47.69	4706.89	47.90	4707.43			28.59	4693.52	28.84	4693.48
1/17/1994	49.50	4706.01	49.48	4706.04	47.69	4706.89	47.99	4707.34			28.96	4693.15	29.31	4693.01
6/27/1994	54.43	4701.08	54.42	4701.10	47.51	4707.07	47.81	4707.52			28.77	4693.34	29.05	4693.27
2/1/1995	54.43	4701.08	54.45	4701.07	47.82	4706.76	47.53	4707.80			28.71	4693.40	28.99	4693.33
6/28/1995	53.98	4701.53	53.93	4701.59	46.54	4708.04	46.84	4708.49			28.17	4693.94	28.42	4693.90
11/28/1995	54.10	4701.41			47.07	4707.51	47.37	4707.96			28.52	4693.59	28.75	4693.57
6/25/1996	53.91	4701.60	53.93	4701.59	46.44	4708.14	46.72	4708.61			27.76	4694.35	27.92	4694.40
12/11/1996	54.78	4700.73	54.21	4701.31	46.97	4707.61	47.25	4708.08			28.08	4694.03	28.23	4694.09
6/19/1997	53.03	4702.48	53.05	4702.47	45.09	4709.49	45.41	4709.92			25.45	4696.66	25.33	4696.99
12/15/1997	53.79	4701.72	53.80	4701.72	46.38	4708.20	46.69	4708.64			28.39	4693.72	28.61	4693.71
6/30/1998	53.49	4702.02	53.50	4702.02	45.65	4708.93	45.94	4709.39			26.91	4695.20	26.96	4695.36
12/14/1998	53.73	4701.78	53.74	4701.78	46.32	4708.26	46.60	4708.73			28.40	4693.71	28.61	4693.71
6/22/1999	53.64	4701.87	53.66	4701.86	46.06	4708.52	46.36	4708.97			28.23	4693.88	28.43	4693.89
12/14/1999	53.87	4701.64	53.91	4701.61	46.59	4707.99	46.87	4708.46			28.56	4693.55	28.79	4693.53
6/8/2000	53.95	4701.56	53.96	4701.56	46.68	4707.90	46.96	4708.37			28.33	4693.78	28.54	4693.78
11/28/2000	54.23	4701.28	54.26	4701.26	47.09	4707.49	47.40	4707.93			28.65	4693.46	28.91	4693.41
6/12/2001	54.30	4701.21	54.37	4701.15	47.20	4707.38	47.51	4707.82			28.51	4693.60	28.71	4693.61
12/18/2001	54.78	4700.73	54.69	4700.83	47.66	4706.92	47.96	4707.37			28.82	4693.29	28.82	4693.50
6/13/2002	54.21	4701.30	54.25	4701.27	46.87	4707.71	47.13	4708.20			26.93	4695.18	26.98	4695.34
12/12/2002	54.81	4700.70	54.91	4700.61	48.08	4706.50	48.34	4706.99			29.03	4693.08	29.24	4693.08
6/10/2003	54.56	4700.95			47.63	4706.95	47.92	4707.41			28.50	4693.61	28.70	4693.62
12/3/2003	55.03	4700.48	55.06	4700.46	48.49	4706.09	48.73	4706.60			29.04	4693.07	29.27	4693.05
6/8/2004	55.01	4700.50	55.03	4700.49	48.34	4706.24	48.59	4706.74			28.59	4693.52	28.78	4693.54
12/6/2004	55.22	4700.29	55.23	4700.29	48.67	4705.91	48.89	4706.44			28.86	4693.25	29.11	4693.21
6/16/2005	54.92	4700.59	54.95	4700.57	48.34	4706.24	48.55	4706.78			28.19	4693.92	28.37	4693.95
12/14/2005	55.35	4700.16	55.39	4700.13	48.91	4705.67	49.13	4706.20			28.94	4693.17	29.20	4693.12
3/16/2006	55.14	4700.37												
6/12/2006	55.00	4700.51	55.00	4700.52	48.28	4706.30	48.49	4706.84			28.10	4694.01	28.31	4694.01
9/21/2006	55.32	4700.19												
12/7/2006	55.14	4700.37			48.7	4705.88					29.1	4693.01		
3/15/2007	55.02	4700.49												
6/20/2007	54.32	4701.19			46.83	4707.75					26.97	4695.14		
12/10/2007	54.95	4700.56			48.44	4706.14					28.55	4693.56		
6/24/2008	53.74	4701.77			46.29	4708.29					26.98	4695.13		
12/10/2008	54.6	4700.91			48.04	4706.54					28.54	4693.57		
6/2/2009	53.97	4701.54			46.77	4707.81					27.8	4694.31		
12/9/2009	54.41	4701.10			47.78	4706.80					28.45	4693.66		
6/16/2010	53.88	4701.63			46.52	4708.06					26.96	4695.15		
12/1/2010	54.24	4701.27	54.31	4701.21	47.44	4707.14	47.72	4707.61			28.36	4693.75	28.58	4693.74
6/13/2011	53.15	4702.36	53.25	4702.27	45.51	4709.07	45.80	4709.53			26.83	4695.28	26.89	4695.43
12/5/2011	56.41	4701.46	56.49	4701.46	47.02	4707.56	47.31	4708.02			28.32	4693.79	28.56	4693.76
6/5/2012	56.36	4701.51	56.45	4701.50	46.95	4707.63	47.28	4708.05	42.62	4711.36	28.18	4693.93	28.38	4693.94
12/4/2012	56.69	4701.18	56.80	4701.15	47.50	4707.08	47.77	4707.07	43.09	4710.89	28.39	4693.72	28.62	4693.70
6/12/2013	56.81	4701.06	56.81	4701.14	47.74	4706.84	48.02	4706.82	43.31	4710.67	28.28	4693.83	28.53	4693.79
12/18/2013	56.92	4700.95	57.02	4700.93	47.85	4706.73	48.10	4706.74	43.32	4710.66	28.48	4693.63	28.70	4693.62
3/26/2014					46.65	4707.93			42.60	4711.38	27.48	4694.63		
8/21/2014	56.87	4701.00	56.94	4701.01	47.65	4706.93	48.92	4705.92	43.53	4710.45	28.35	4693.76	28.60	4693.72
12/8/2014	56.91	4700.96	57.00	4700.95	47.75	4706.83	47.99	4706.85	43.29	4710.69	28.29	4693.82	28.52	4693.80
6/16/2015	57.00	4700.87	57.09	4700.86	48.90	4705.68	48.17	4706.67	43.58	4710.40	28.34	4693.77	28.56	4693.76
12/1/2015	57.21	4700.66	57.31	4700.64	48.28	4706.30	48.49	4706.35	43.63	4710.35	28.42	4693.69	28.67	4693.65
6/15/2016	57.10	4700.77	57.20	4700.75	47.99	4706.59	48.20	4706.64	43.60	4710.38	28.25	4693.86	28.45	4693.87
12/1/2016	57.35	4700.52	57.45	4700.50	48.42	4706.16	48.61	4706.23	43.76	4710.22	28.47	4693.64	28.73	4693.59
6/15/2017	56.80	4701.07	56.90	4701.05	47.30	4707.28	47.55	4707.29	43.21	4710.77	27.81	4694.30	28.01	4694.31
12/1/2017	57.26	4700.61	57.39	4700.56	48.32	4706.26	48.56	4706.28	43.70	4710.28	28.32	4693.79	28.55	4693.77
8/20/2018	56.65	4701.22	56.74	4701.21	47.25	4707.33	47.67	4707.17	43.38	4710.60	28.07	4694.04	28.30	4694.02
11/28/2018	56.77	4701.10	56.87	4701.08	47.64	4706.94	47.90	4706.94	43.22	4710.76	28.21	4693.90	28.45	4693.87
6/12/2019	55.97	4701.90	56.09	4701.86	46.48	4708.10	46.74	4708.10	42.44	4711.54	27.62	4694.49	27.82	4694.50
12/3/2019	56.59	4701.28	56.69	4701.26	47.43	4707.15	47.69	4707.15	42.96	4711.02	28.13	4693.98	28.38	4693.94
										3.87				

MPE change : Measuring point elevation change

DTW : Depth to water below measuring point (feet) N.M. Not measured Blank cell denotes no data

ELEV : Groundwater elevation above mean sea level (feet). Most recent MPE measurement used. Well locations shown on Figure 2.

2 : Approximately 2.4 feet of PVC was added on 7/6/2011. Did not use 6/4/2014 Collar Elevation from this time point on.

TABLE 2 (Continued)
Groundwater Levels
Bozeman Landfill, Bozeman Montana

	MEASURING POINT ELEVATION (in feet above mean sea level)													
	4681.43		4785.49		4772.15		4749.50		4804.85		4856.71		4720.96	
MPE change	Initial MPE	4675.01	Initial MPE	4778.15	Initial MPE	4763.02	Initial MPE	4748.73	Initial MPE	4797.94	Initial MPE	4845.00	Initial MPE	4717.33
							6/30/1998	4742.54						
	6/4/2014	4681.43	6/4/2014	4785.49	6/4/2014	4772.15	6/4/2014	4749.50	6/4/2014	4804.85	6/4/2014	4856.71	6/4/2014	4720.96
Well No.	MW-10		MW-11		MW-12		MW-13[3]		MW-14		MW-15		MW-16	
DATE	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
6/28/1995	6.58	4674.85												
9/12/1995			51.40	4734.09	55.03	4717.12	49.45	4706.24						
11/28/1995	2.07	4679.36	51.55	4733.94	55.09	4717.06	49.56	4706.13						
6/25/1996	1.63	4679.80	51.72	4733.77	54.77	4717.38	49.16	4706.53						
12/11/1996	1.85	4679.58	51.83	4733.66	55.13	4717.02	49.53	4706.16						
6/19/1997	0.90	4680.53	51.35	4734.14	53.82	4718.33	47.27	4708.42						
12/15/1997	1.78	4679.65	51.42	4734.07	54.26	4717.89	59.16	4696.53						
6/30/1998	1.38	4680.05	51.44	4734.05	53.83	4718.32	48.72	4706.97						
12/14/1998	2.20	4679.23	51.52	4733.97	54.17	4717.98	49.14	4706.55						
6/22/1999	1.61	4679.82	51.51	4733.98	54.64	4717.51	49.01	4706.68						
12/14/1999	2.32	4679.11	51.69	4733.80	54.96	4717.19	43.13	4706.37						
6/8/2000	1.95	4679.48	51.76	4733.73	55.11	4717.04	43.21	4706.29						
11/28/2000	2.44	4678.99	51.99	4733.50	55.44	4716.71	43.49	4706.01						
6/12/2001	1.38	4680.05	52.03	4733.46	55.75	4716.40	43.60	4705.90	32.96	4771.89				
12/19/2001	2.55	4678.88	52.27	4733.22	56.06	4716.09	43.87	4705.63	33.71	4771.14	47.77	4808.94		
6/13/2002	1.25	4680.18	52.12	4733.37	55.90	4716.25	43.45	4706.05						
12/12/2002	2.70	4678.73	52.39	4733.10	56.49	4715.66	44.10	4705.40	34.28	4770.57	48.63	4808.08		
6/10/2003	1.18	4680.25	52.22	4733.27	56.39	4715.76	43.87	4705.63	33.53	4771.32	48.10	4808.61		
12/3/2003	2.59	4678.84	52.47	4733.02	56.91	4715.24	44.31	4705.19	34.65	4770.20	49.44	4807.27		
6/8/2004	1.81	4679.62	52.44	4733.05	57.04	4715.11	44.26	4705.24	34.46	4770.39	49.89	4806.82		
12/6/2004	2.45	4678.98	53.01	4732.48	57.17	4714.98	44.44	4705.06	35.34	4769.51	50.76	4805.95		
6/16/2005	1.45	4679.98	52.47	4733.02	57.15	4715.00	44.26	4705.24	34.66	4770.19	50.35	4806.36		
12/14/2005	2.57	4678.86	52.77	4732.72	57.39	4714.76	44.60	4704.90	35.82	4769.03	51.74	4804.97		
3/16/2006					57.25	4714.90	44.32	4705.18						
6/12/2006	1.90	4679.53	53.9	4731.59	57.20	4714.95	44.20	4705.30	34.41	4770.44	50.30	4806.41		
12/6/2006	2.4	4679.03	52.5	4732.99	57.19	4714.96	44.37	4705.13	35.07	4769.78	50.49	4806.22		
6/19/2007	1.51	4679.92	52.03	4733.46	57.79	4714.36	43.34	4706.16	33.16	4771.69	48.12	4808.59		
12/10/2007	2.25	4679.18	52.31	4733.18	56.98	4715.17	44.2	4705.30	34.9	4769.95	48.31	4808.40		
6/26/2008	1.24	4680.19	51.82	4733.67	56.1	4716.05	42.95	4706.55	31.19	4773.66	45.78	4810.93		
12/9/2008	1.82	4679.61	52.06	4733.43	56.55	4715.60	43.94	4705.56	32.75	4772.10	45.51	4811.20		
6/2/2009	1.22	4680.21	51.7	4733.79	55.8	4716.35	43.27	4706.23	31.37	4773.48	44.82	4811.89		
12/4/2009	1.99	4679.44	51.85	4733.64	56.21	4715.94	43.75	4705.75	32.29	4772.56	45.37	4811.34		
6/16/2010	1	4680.43	51.63	4733.86	55.71	4716.44	43.04	4706.46	31.12	4773.73	44.61	4812.10		
12/1/2010	1.78	4679.65	51.79	4733.70	55.95	4716.20	43.54	4705.96	31.84	4773.01	44.35	4812.36		
6/13/2011	0.80	4680.63	51.18	4734.31	54.59	4717.56	42.40	4707.10	29.01	4775.84	41.52	4815.19		
12/5/2011	2.09	4679.34	51.57	4733.92	55.40	4716.75	43.28	4706.22	31.10	4773.75	42.60	4814.11		
6/5/2012	1.66	4679.77	51.54	4733.95	55.46	4716.69	43.26	4706.24	31.46	4773.39	43.95	4812.76	26.02	4694.94
12/5/2012	2.03	4679.40	51.84	4733.65	55.85	4716.30	43.59	4705.91	32.83	4772.02	45.98	4810.73	26.24	4694.72
6/12/2013	1.58	4679.85	51.85	4733.64	56.25	4715.90	43.70	4705.80	33.24	4771.61	47.20	4809.51	26.24	4694.72
12/18/2013			52.00	4733.49	56.13	4716.02	43.81	4705.69	33.90	4770.95	48.80	4807.91	26.03	4694.93
3/26/2014	1.40	4680.03	51.76	4733.73	55.72	4716.43	43.46	4706.04	33.23	4771.62	49.05	4807.66	25.64	4695.32
8/21/2014	2.43	4679.00	51.80	4733.69	56.34	4715.81	43.65	4705.85			47.02	4809.69	26.18	4694.78
12/8/2014	1.95	4679.48	51.85	4733.64	56.16	4715.99	43.70	4705.80	33.30	4771.55	47.60	4809.11	26.24	4694.72
6/15/2015	2.33	4679.10	51.93	4733.56	56.52	4715.63	43.81	4705.69	33.75	4771.10	48.83	4807.88	26.19	4694.77
12/1/2015	2.51	4678.92	52.80	4732.69	56.55	4715.60	44.40	4705.10	34.81	4770.04	50.34	4806.37	26.36	4694.60
6/15/2016	0.65	4680.78	52.00	4733.49	56.64	4715.51	43.90	4705.60	34.53	4770.32	50.80	4805.91	26.18	4694.78
12/1/2016	2.43	4679.00	52.14	4733.35	56.75	4715.40	44.15	4705.35	35.60	4769.25	51.80	4804.91	24.44	4696.52
6/15/2017	1.53	4679.90	51.78	4733.71	56.23	4715.92	43.56	4705.94	33.44	4771.41	49.88	4806.83	25.78	4695.18
12/1/2017	1.94	4679.49	51.84	4733.65	56.83	4715.32	44.09	4705.41	34.47	4770.38	50.02	4806.69	26.30	4694.66
8/20/2018	2.04	4679.39	51.31	4734.18	56.14	4716.01	43.38	4706.12	32.10	4772.75	45.25	4811.46	25.92	4695.04
11/27/2018	2.07	4679.36	51.30	4734.19	56.03	4716.12	43.61	4705.89	32.05	4772.80	44.91	4811.80	25.98	4694.98
6/12/2019	1.60	4679.83	51.08	4734.41	55.09	4717.06	42.84	4706.66	31.16	4773.69	43.82	4812.89	25.31	4695.65
12/3/2019	2.06	4679.37	51.25	4734.24	55.70	4716.45	43.42	4706.08	31.68	4773.17	43.36	4813.35	25.92	4695.04

MPE change : Measuring point elevation change

DTW : Depth to water below measuring point (feet) N.M. Not measured Blank cell denotes no data

ELEV : Groundwater elevation above mean sea level (feet). Most recent MPE measurement used. Well locations shown on Figure 2.

3 : 6.19 feet of PVC casing was removed on 06/30/1999.

TABLE 2 (Continued)
Groundwater Levels
Bozeman Landfill, Bozeman Montana

	MEASURING POINT ELEVATION (in feet above mean sea level)													
	4810.03		4772.36		4724.94		4778.01		4704.56		4693.62		4689.79	
Well No.	MW-17		MW-18		MW-19		MW-20		MW-21		MW-22		MW-23	
DATE	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
6/28/1995														
9/12/1995														
11/28/1995														
6/25/1996														
12/11/1996														
6/19/1997														
12/15/1997														
6/30/1998														
12/14/1998														
6/22/1999														
12/14/1999														
6/8/2000														
11/28/2000														
6/12/2001														
12/19/2001														
6/13/2002														
12/12/2002														
6/10/2003														
12/3/2003														
6/8/2004														
12/6/2004														
6/16/2005														
12/14/2005														
3/16/2006														
6/12/2006														
12/1/2010														
6/13/2011														
12/5/2011														
6/5/2012														
12/5/2012														
6/12/2013														
12/18/2013														
3/26/2014	75.60	4734.43	47.23	4725.13	21.23	4703.71	53.20	4724.81	9.39	4695.17	3.81	4689.81	5.49	4684.30
8/21/2014	76.12	4733.91	47.89	4724.47	22.05	4702.89	54.14	4723.87	9.77	4694.79	4.86	4688.76	6.28	4683.51
12/8/2014	75.84	4734.19	47.42	4724.94	22.07	4702.87	53.38	4724.63	10.17	4694.39	4.83	4688.79	6.24	4683.55
6/17/2015	76.50	4733.53	48.02	4724.34	22.15	4702.79	54.23	4723.78	9.58	4694.98	4.55	4689.07	5.83	4683.96
12/1/2015	76.85	4733.18	47.85	4724.51	22.30	4702.64	54.60	4723.41	10.70	4693.86	5.23	4688.39	6.56	4683.23
6/15/2016	77.40	4732.63	47.90	4724.46	22.10	4702.84	54.67	4723.34	9.62	4694.94	4.41	4689.21	5.73	4684.06
12/1/2016	79.35	4730.68	47.89	4724.47	22.09	4702.85	56.24	4721.77	NM		NM		NM	
6/15/2017	77.35	4732.68	47.45	4724.91	21.75	4703.19	54.61	4723.40	9.09	4695.47	3.98	4689.64	5.32	4684.47
12/1/2017	77.68	4732.35	48.15	4724.21	22.12	4702.82	54.68	4723.33	10.51	4694.05	4.77	4688.85	5.92	4683.87
8/20/2018	77.10	4732.93	47.81	4724.55	22.02	4702.92	54.92	4723.09	9.67	4694.89	4.50	4689.12	5.92	4683.87
11/28/2018	76.43	4733.60	47.44	4724.92	22.05	4702.89	54.03	4723.98	10.42	4694.14	4.96	4688.66	6.22	4683.57
6/13/2019	76.08	4733.95	46.56	4725.80	21.67	4703.27	53.37	4724.64	8.29	4696.27	3.83	4689.79	5.40	4684.39
12/3/2019	75.89	4734.14	46.91	4725.45	21.94	4703.00	53.41	4724.60	10.08	4694.48	4.72	4688.90	6.10	4683.69

MPE change : Measuring point elevation change

DTW : Depth to water below measuring point (feet) N.M. Not measured Blank cell denotes no data

ELEV : Groundwater elevation above mean sea level (feet). Most recent MPE measurement used. Well locations shown on Figure 2.

Well MW-18 depth to groundwater = 47.23 measured 5/2/2014

TABLE 2 (Continued)
Groundwater Levels
Bozeman Landfill, Bozeman Montana

	MEASURING POINT ELEVATION (in feet above mean sea level)							
	4804.52		4775.45		4732.82		4729.45	
Well No.	MW-24		MW-25		MW-26		MW-27	
DATE	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
6/28/1995								
9/12/1995								
11/28/1995								
6/25/1996								
12/11/1996								
6/19/1997								
12/15/1997								
6/30/1998								
12/14/1998								
6/22/1999								
12/14/1999								
6/8/2000								
11/28/2000								
6/12/2001								
12/19/2001								
6/13/2002								
12/12/2002								
6/10/2003								
12/3/2003								
6/8/2004								
12/6/2004								
6/16/2005								
12/14/2005								
3/16/2006								
6/12/2006								
12/1/2010								
6/13/2011								
12/5/2011								
6/5/2012								
12/5/2012								
6/12/2013								
12/18/2013								
3/26/2014	74.50	4730.02	50.22	4725.23	14.41	4718.41		
8/21/2014	75.45	4729.07	50.75	4724.70	14.79	4718.03		
12/8/2014	74.90	4729.62	50.72	4724.73	15.03	4717.79	19.73	4709.72
6/18/2015	75.70	4728.82	50.95	4724.50	14.89	4717.93	19.89	4709.56
12/1/2015	75.90	4728.62	51.06	4724.39	15.14	4717.68		
6/16/2016	76.80	4727.72	51.00	4724.45	14.69	4718.13	19.75	4709.70
12/1/2016	76.30	4728.22	51.23	4724.22	15.18	4717.64	19.75	4709.70
6/15/2017	76.45	4728.07	50.78	4724.67	14.43	4718.39	19.41	4710.04
12/1/2017	76.53	4727.99	50.78	4724.67	14.50	4718.32	19.74	4709.71
8/20/2018	76.39	4728.13	50.88	4724.57	14.68	4718.14	19.91	4709.54
11/27/2018	75.53	4728.99	51.00	4724.45	14.87	4717.95	19.71	4709.74
6/12/2019	76.20	4728.32	50.19	4725.26	14.42	4718.40	19.38	4710.07
12/3/2019	74.85	4729.67	50.63	4724.82	14.86	4717.96	19.69	4709.76

MPE change : Measuring point elevation change

DTW : Depth to water below measuring point (feet) N.M. Not measured Blank cell denotes no data

ELEV : Groundwater elevation above mean sea level (feet). Most recent MPE measurement used. Well locations shown on Figure 2.

Well MW-25 depth to groundwater = 50.22 measured 5/2/2014

Well MW-27 depth to groundwater = 19.73 measured 1/16/2015

TABLE 3
Summary of Volatile Organic Compound Detections
December 2019 Groundwater Monitoring
Bozeman Landfill, Bozeman, Montana

	Sampling Site																													
	LF-2	LF-3	MW-4	MW-5	MW-6	MW-7A	MW-8A	MW-9A	MW-10	MW-11	MW-12	MW-13	MW-15	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	McILHATTAN SEEP	SHOP WELL	VET CLINIC WELL	TRIP BLANK 1	TRIP BLANK 2
				ND									ND									ND	ND				ND	ND	ND
Analyte Date	December 2-4, 2019																													
1112Tetrachloroethane																														
111Trichloroethane																														
1122Tetrachloroethane																														
112Trichloroethane																														
112Trichlorotrifluoroethane																														
11Dichloroethane			0.26J		0.87	2		0.36J			1.6			0.85												1.8				
11Dichloroethene																														
123Trichloropropane																														
124Trimethylbenzene																0.31J				0.21J										
12Dibromo3chloropropane																														
12DibromoethaneEDB																														
12Dichlorobenzene																														
12Dichloroethane																														
12Dichloropropane											0.4J	0.29J		1.5J																
14Dichlorobenzene					0.23J										1.3															
14DioxanepDioxane																														
2ButanoneMEK																														
2Hexanone																														
2Propanol																														
4Methyl2pentanoneMIBK																														
Acetone																														
Acrylonitrile																														
Benzene					0.19J	0.19J					0.6	0.53			0.45J	0.11J			0.13J	0.2J										
Bromochloromethane																														
Bromodichloromethane																														
Bromoform																														
Bromomethane																														
Carbondisulfide																														
Carbontetrachloride																														
Chlorobenzene												0.28J			0.33J														
Chloroethane					0.93J							1.2																		
Chloroform																														
Chloromethane																														
cis12Dichloroethene	0.26J	1.3	0.61		1.6	0.57	0.51	0.76	0.27J		9.1	0.95		24.4	1										0.19J	1.1			
cis13Dichloropropene																														
Cyclohexane																														
Dibromochloromethane																														
Dibromomethane																														
Dichlorodifluoromethane												0.65J																		
Ethylbenzene																														
Iodomethane																														
IsopropylbenzeneCumene																														
MethyleneChloride														**12.3**																
Methyltertbutylether																														
nHexane																														
nPropylbenzene																														
Styrene																														
Tetrachloroethene	0.67	2.4	0.88		0.31J	1.6	0.56	1.3						**8.9**		0.68	**6.8**				0.8			1.4	0.75	**5.8**				
Tetrahydrofuran															8.8J															
Toluene															0.28J	0.61		0.13J	0.27J	0.51										
trans12Dichloroethene																														
trans13Dichloropropene																														
trans14Dichloro2butene																														
Trichloroethene		0.62	0.38J		0.26J	1.7		0.65	0.25J		0.8	0.26J		4.4			0.16J									1.8				
Trichlorofluoromethane						0.44J				2.3																0.68J				
Vinylacetate																														
Vinylchloride					**1.8**	**0.36**					**8.3**	**10.2**		**0.3**	**2.2**															
XyleneTotal																														

Notes:
VOC - Volatile Organic Compound
Concentrations in micrograms per liter (µg/L)
NA - Not Analyzed
Bolded and Shaded Values - Constituent concentration exceeding USEPA Drinking Water Standards, Maximum Contaminant Level and/or Montana Human Health Standard (Health Advisory)
Reference - 2017, DEQ. Circular DEQ-7 Montana Numeric Water Quality Standards. May.
ND or blank record and/or field - Analyte or Analyte(s) Not Detected above minimum detection limit (MDL)
J - Estimated Concentration (less than analytical practical quantitation limit or PQL but greater than the analytical MDL)

TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
LF-2	12/6/2010	U 1	U 1	U 1	U 1	U 1	1.3	U 1	U 1
	6/14/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	1.1	U 0.05	U 0.049
	12/5/2011	U 0.05	0.27	U 5	U 0.072	U 0.13	1.4	J 0.23	U 0.16
	6/4/2012	J 0.12	J 0.25	U 2	U 0.072	U 0.13	1.9	J 0.31	U 0.16
	12/6/2012	U 0.05	J 0.15	U 2	U 0.072	U 0.13	1.1	J 0.14	U 0.16
	6/12/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	0.86	J 0.12	U 0.2
	12/18/2013	U 0.24	J 0.29	U 2	U 0.25	U 0.5	0.83	J 0.15	U 0.1
	3/27/2014	U 0.24	J 0.37	U 2	U 0.25	U 0.5	0.89	J 0.16	U 0.1
	8/21/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	1.2	J 0.13	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	0.98	J 0.31	U 0.082
	6/15/2015	U 0.21	J 0.36	U 0.56	U 0.22	U 0.64	0.67	J 0.23	U 0.081
	12/1/2015	U 0.21	J 0.37	U 0.56	U 0.22	U 0.64	0.75	J 0.19	U 0.081
	6/15/2016	U 0.21	J 0.48	U 0.56	U 0.22	U 0.64	0.72	U 0.14	U 0.081
	8/25/2016	U 0.04	J 0.44	U 0.097	U 0.055	U 0.08	0.84	J 0.12	U 0.084
	11/28/2016	U 0.04	J 0.36	U 0.097	U 0.055	U 0.08	0.65	J 0.14	U 0.098
	4/17/2017	U 0.04	J 0.29	U 0.097	U 0.055	U 0.08	0.62	U 0.044	U 0.098
	6/16/2017	U 0.04	J 0.48	U 0.097	U 0.055	U 0.08	0.76	J 0.094	U 0.098
	9/20/2017	U 0.13	J 0.48	U 1.2	U 0.14	U 1.1	0.73	U 0.18	U 0.096
	11/29/2017	U 0.13	0.55	U 1.2	U 0.14	U 1.1	0.96	U 0.18	U 0.096
	3/27/2018	U 0.13	J 0.36	U 1.2	U 0.14	U 1.1	0.74	U 0.18	U 0.096
	8/20/2018	U 0.1	J 0.4	U 0.98	U 0.17	U 0.16	1.1	U 0.15	U 0.092
	10/16/2018	U 0.1	J 0.42	U 0.98	U 0.17	J 0.52	0.8	U 0.15	U 0.092
	11/27/2018	U 0.1	J 0.42	U 0.98	U 0.17	U 0.16	0.73	U 0.15	U 0.092
	3/27/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	J 0.42	U 0.15	U 0.092
	6/12/2019	U 0.1	J 0.27	U 0.98	U 0.17	U 0.16	0.65	U 0.15	U 0.092
	9/24/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	J 0.48	U 0.15	U 0.092
	12/3/2019	U 0.1	J 0.26	U 0.98	U 0.17	U 0.48	0.67	U 0.15	U 0.092
LF-3	1/18/1994	U 2	U 1	U 5	U 1	U 1	5	1	U 1
	6/27/1994	U 1	U 1	U 5	U 1	U 1	5	1	U 1
	2/1/1995	U 1	U 1	U 5	U 1	U 1	5	1	U 1
	6/28/1995	U 1	U 1	U 1	U 1	U 1	3	1	U 1
	11/28/1995	U 1	U 1	U 5	U 1	U 1	6	2	U 1
	6/25/1996	U 1	1	U 5	U 1	U 1	6	2	U 1
	12/11/1996	U 1	U* 1	U 5	U 1	U 1	5	2	U 1
	6/19/1997	U 1	1	U 1	U 1	U 2	6	2	U 2
	12/15/1997	U 1	1	U 5	U 1	U 1	2	6	U 1
	3/24/1998	U 1	1	U 5	U 1	U 1	7	2	U 1
	6/29/1998	U 1	U 1	<(2) 5	(2) U 1	< (2) 1	6	3	U 1
	9/29/1998	U 1	1	11	U 1	U 1	7	3	U 1
	12/14/1998	U 1	1	U(1)B 5	U 1	(1) U 1	6	6	U 1

Notes: µg/L - micrograms per liter
HHS - Human Health Standard (EPA Maximum Contaminant Level or HHS in Circular DEQ-7, Montana Numeric WQ Stds, June 2019)
NA - Not Applicable < Less than

J - Estimated Concentration
(1) - No HHS or MCL established
-- - Not collected/analyzed
U - Below Method Detection Limit
* (1, 2, or 3) B JF% - Additional QA/QC notes described in lab report

- Value greater than the HHS

Vinyl Chloride concentration highlighted only if greater than 2 micrograms per liter (EPA Maximum Contaminant Level). Montana HHS is greater than 0.2 micrograms per liter (not highlighted).

TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
LF-3	3/15/1999	U 1	(1) U 1	(1) U 5	U 1		6	2	U 1
	6/22/1999	U 1	U 1	(1) U 5	U 1	U 1	4	1	U 1
	9/13/1999	U 1	(1) U 1	(1) U 5	U 1	U 1	4	1	U 1
	12/13/1999	U 1	(1) U 1	(1) U 5	U 1	U 1	5	2	U 1
	3/22/2000	U 1	(1) U 1	U 5	U 1	U 1	5	2	U 1
	6/7/2000	U 1	(1) U 1	(1) U 5	U 1	U 1	4	1	U 1
	9/22/2000	U 1	U 1	(1) U 5	U 1	U 1	4	1	U 1
	11/28/2000	U 1	U 1	U 5	U 1	U 1	4	1	U 1
	3/22/2001	U 1	1	U 5	U 1	U 1	5	1	U 1
	6/11/2001	U 1	1	U 5	U 1	U 1	5	2	U 1
	9/19/2001	U 1	1	U(1,3) 5	U 1	1	5	3	U 1
	12/17/2001	U 1	1	(1) U 5	(1) U 1	U 1	6	2	U 1
	3/25/2002	U 1	1	U 5	U 1	2	6	1	U 1
	6/13/2002	U 1	1	(1) U 5	(1) U 1	U 1	5	1	U 1
	9/24/2002	U 1	1	UJR 5	U 1	U 1	5	1	U 1
	12/12/2002	U 1	1	(1) U 5	U 1	U 1	6	1	U 1
	3/24/2003	U 1	1	(1) U 5	(1) U 1	(1) U 1	5	1	U 1
	6/9/2003	U 1	1	(1) U 5	U 1	(1) U 1	5	1	U 1
	9/25/2003	U 1	1	(1) U 5	(1) U 1	U 1	5	1	U 1
	12/4/2003	U 1	(1) U 1	(1) U 5	U 1	U 1	4	1	JJF% 1
	3/25/2004	U 1	1	U 5	U 1	U 1	4	(1) U 1	U 1
	6/9/2004	U 1	1	(1) U 5	U 1	U 1	4	(1) U 1	U 1
	9/9/2004	U 1	(1) U 1	(1) U 5	U 1	U 1	4	(1) U 1	U 1
	12/6/2004	U 1	(1) U 1	(1) U 5	U 1	U 1	4	(1) U 1	U 1
	3/29/2005	U 1	(1) U 1	(1) U 5	U 1	U 1	3	(1) U 1	U 1
	6/16/2005	U 1	(1) U 1	U 5	U 1	U 1	3	(1) U 1	U 1
	9/20/2005	U 1	(1) U 1	(1) BU 5	U 1	U 1	3	U 1	U 1
	12/13/2005	U 1	(1) U 1	(1) U 5	U 1	U 1	3	(1) U 1	U 1
	3/16/2006	U 1	(1) U 1	U 5	U 1	U 1	3	(1) U 1	U 1
	6/12/2006	U 0.5	0.8	(1) U 5	(1) U 1	U 1	2.7	0.5	U 0.5
	9/20/2006	U 0.5	0.6	U(1) 5	U(1) 1	U 1	2.3	U(1) 0.5	U 0.5
	12/5/2006	U 0.5	0.7	U 5	U 1	U 1	2.7	U(1) 0.5	U 0.5
	3/13/2007	U 0.5	0.8	U 5	U(1) 1	U 1	2.7	0.6	U 0.5
	6/21/2007	U 0.5	0.9	U 5	U 1	U 1	2.6	0.6	JJF% 0.5
	12/11/2007	U 0.5	0.8	U 5	U 1	U(1) 1	2.5	0.6	U 0.5
	6/25/2008	U 0.5	1	U(1) 5	U 1	U 1	2.9	0.7	U 0.5
	12/8/2008	U 1	1.6	U 4	U 1	U 1	3.9	1.1	U 0.4
	6/2/2009	U 0.5	1.5	U 2	U 0.5	U 2	4.5	1	U 0.2
	12/10/2009	U 0.5	1.8	UB 2	U 0.5	U 2	4.4	1	U 0.2
	6/16/2010	U 0.5	2.1	30.4	U 0.5	U 0.5	4.4	1.1	U 0.5

Notes: µg/L - micrograms per liter
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File: bozLandfill2-1.mdb [Reports - MonRptTable4]

TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
LF-3	12/6/2010	U 1	1.2	U 1	U 1	U 1	3.9	U 1	U 1
	6/13/2011	U 0.04	1.9	U 2	J 0.11	J 0.11	3.9	0.96	U 0.049
	12/6/2011	U 0.05	1.8	U 5	U 0.072	U 0.13	3.8	0.9	U 0.16
	6/4/2012	J 0.05	1.9	U 2	J 0.086	U 0.13	4.1	0.94	U 0.16
	12/6/2012	U 0.05	1.8	U 2	J 0.14	U 0.13	3.8	0.88	U 0.16
	6/12/2013	U 0.24	2.3	U 2	U 0.25	U 0.5	4.2	1	U 0.2
	12/18/2013	U 0.24	2.2	U 2	U 0.25	U 0.5	3.4	0.78	U 0.1
	3/26/2014	U 0.24	2	U 2	U 0.25	U 0.5	2.4	0.61	U 0.1
	8/20/2014	U 0.07	2.4	U 2	U 0.077	U 0.34	5.5	1.1	U 0.082
	12/10/2014	U 0.07	3.4	U 2	U 0.087	U 0.34	4.2	0.94	U 0.082
	6/15/2015	U 0.21	2.1	U 0.56	U 0.22	U 0.64	3.9	0.82	U 0.081
	12/1/2015	U 0.21	2.4	U 0.56	U 0.22	U 0.64	3.8	0.94	U 0.081
	6/15/2016	U 0.21	2.7	U 0.56	U 0.22	U 0.64	3.6	0.76	U 0.081
	8/25/2016	U 0.04	2.9	U 0.097	U 0.055	U 0.08	4.1	0.94	U 0.084
	11/28/2016	U 0.04	2.5	U 0.097	U 0.055	U 0.08	3.9	0.71	U 0.098
	4/17/2017	U 0.04	2.7	U 0.097	U 0.055	U 0.08	3.3	0.88	U 0.098
	6/15/2017	U 0.04	2.4	U 0.097	U 0.055	U 0.08	2.9	0.88	U 0.098
	9/20/2017	U 0.13	2.3	U 1.2	U 0.14	U 1.1	3.4	0.82	U 0.096
	11/29/2017	U 0.13	2.3	U 1.2	U 0.14	U 1.1	3.4	0.7	U 0.096
	3/27/2018	U 0.13	2	U 1.2	U 0.14	U 1.1	3.4	0.88	U 0.096
	8/20/2018	U 0.1	2.3	U 0.98	U 0.17	U 0.16	3.5	0.93	U 0.092
	10/16/2018	U 0.1	2.1	U 0.98	U 0.17	J 0.71	2.9	0.82	U 0.092
	11/27/2018	U 0.1	1.7	U 0.98	U 0.17	U 0.16	3	0.7	U 0.092
	3/27/2019	39.9	1.3	U 0.98	U 0.17	U 0.16	1.8	0.45	U 0.092
	6/12/2019	U 0.1	1.5	U 0.98	U 0.17	U 0.16	2.4	0.58	U 0.092
	9/24/2019	U 0.1	1.4	U 0.98	U 0.17	U 0.48	1.9	0.49	U 0.092
	12/3/2019	U 0.1	1.3	U 0.98	U 0.17	U 0.48	2.4	0.62	U 0.092
MW-4	1/18/1994	U 2	U 1	U 5	2	U 1	4	2	U 1
	6/27/1994	U 1	U 1	U* 5	2	U 1	4	2	U 1
	1/31/1995	U 1	U 1	U* 5	1	U 1	3	2	U 1
	6/27/1995	U 1	U 1	JX 1	1	U 1	2	1	U 1
	11/28/1995	U 1	U 1	U* 5	1	U 1	3	1	U 1
	6/25/1996	U 1	U 1	U 5	1	U 1	3	2	U 1
	12/11/1996	U 1	U* 1	U 5	U 1	U 1	2	1	U 1
	6/19/1997	U 1	U 1	U 1	U 1	U 2	2	U 1	U 2
	12/15/1997	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	6/29/1998	U 1	<(2) 1	<(5) 5	(1) U 1	< (2) 1	2	1	U 1
	12/14/1998	U 1	(1) U 1	U(1)B 5	(1) U 1	(1) U 1	2	2	U 1
	6/22/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	1	U 1
	12/13/1999	U 1	U 1	(1) U 5	(1) U 1	U 1	2	1	U 1

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Sampling Location	Sampling Date	LABORATORY PARAMETERS							
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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-4	6/7/2000	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	11/28/2000	U 1	U 1	U 5	U 1	U 1	1	1	U 1
	6/11/2001	U 1	U 1	U 5	U 1	U 1	2	1	U 1
	12/17/2001	U 1	1	(1) U 5	(1) U 1	U 1	1	1	U 1
	6/13/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	1	U 1
	12/11/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	6/9/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	12/4/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	JJF% 1
	6/9/2004	U 1	(1) U 1	(1) U 5	U 1	U 1	(1) U 1	(1) U 1	U 1
	12/6/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/16/2005	U 1	(1) U 1	(1) U 5	U 1	U 1	(1) U 1	(1) U 1	U 1
	12/14/2005	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/12/2006	U 0.5	(1) U 0.5	(1) U 5	(1) U 1	U 1	0.5	(1) U 0.5	U 0.5
	12/5/2006	U 0.5	U(1) 0.5	U 5	U 1	U 1	U(1) 0.5	U(1) 0.5	U 0.5
	6/19/2007	U 0.5	U 0.5	U 5	U 1	U 1	0.6	U 0.5	JJF% 0.5
	12/11/2007	U 0.5	U(1) 0.5	U 5	U 1	U 1	0.5	U(1) 0.5	U 0.5
	6/23/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	0.5	U(1) 0.5	U 0.5
	12/8/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	J 0.98	J 0.54	U 0.2
	12/10/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	J 0.83	J 0.56	U 0.2
	6/15/2010	U 0.5	0.51	27.6	U 0.5	U 0.5	0.85	0.66	U 0.5
	12/7/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/13/2011	U 0.04	J 0.49	U 2	J 0.24	J 0.097	0.78	0.66	U 0.049
	12/7/2011	U 0.05	J 0.4	U 5	J 0.25	U 0.13	0.87	0.64	U 0.16
	6/4/2012	J 0.51	J 0.48	U 2	J 0.25	U 0.13	1.2	0.86	U 0.16
	12/4/2012	U 0.05	J 0.45	U 2	J 0.29	U 0.13	1.1	0.79	U 0.16
	6/10/2013	U 0.24	J 0.5	U 2	J 0.42	U 0.5	1.1	0.97	U 0.2
	12/16/2013	U 0.24	J 0.47	U 2	J 0.45	U 0.5	1	0.77	U 0.1
	3/26/2014	U 0.24	0.53	U 2	J 0.45	U 0.5	1	0.86	U 0.1
	8/20/2014	U 0.07	J 0.4	U 2	U 0.077	U 0.34	1.6	0.89	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	1.2	1	U 0.082
	6/16/2015	U 0.21	U 0.25	U 0.56	J 0.45	U 0.64	1.2	0.78	U 0.081
	11/30/2015	U 0.21	J 0.48	U 0.56	U 0.22	U 0.64	1.1	0.73	U 0.081
	6/14/2016	U 0.21	J 0.43	U 0.56	J 0.28	U 0.64	1	0.74	U 0.081
	11/29/2016	U 0.04	J 0.45	U 0.097	U 0.055	U 0.08	0.88	0.65	U 0.098
	6/14/2017	U 0.04	0.55	U 0.097	U 0.055	U 0.08	0.79	0.64	U 0.098
	11/30/2017	U 0.13	0.59	U 1.2	U 0.14	U 1.1	1	0.57	U 0.096
	8/20/2018	U 0.1	0.58	U 0.98	J 0.37	J 0.41	1	0.59	U 0.092
	11/29/2018	U 0.1	0.54	U 0.98	J 0.31	U 0.16	0.81	0.49	U 0.092
	6/12/2019	U 0.1	0.59	U 0.98	U 0.17	U 0.16	0.79	0.43	U 0.092

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-4	12/2/2019	U 0.1	0.61	U 0.98	J 0.26	U 0.48	0.88	J 0.38	U 0.092
MW-5	1/17/1994	U 2	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/27/1994	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	1/31/1995	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/27/1995	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	11/27/1995	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/25/1996	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/11/1996	U 1	U 1	U 5	U 1	U* 1	U 1	U 1	U 1
	6/19/1997	U 1	U 1	U 1	U 1	U 2	U 1	U 1	U 2
	12/15/1997	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/29/1998	U 1	U 1	U 5	U 1	1	U 1	U 1	U 1
	12/14/1998	U 1	U 1	U(1)B 5	U 1	(1) U 1	U 1	U 1	U 1
	6/22/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/13/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/7/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	11/28/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/11/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/17/2001	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	6/13/2002	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	12/11/2002	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/9/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/3/2003	(1) U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	JJF% 1
	6/9/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/16/2005	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/14/2005	(1) U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2006	U 0.5	U 0.5	(1) U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/5/2006	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	6/19/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	JJF% 0.5
	12/11/2007	U 0.5	U 0.5	U 5	U 1	U(1) 1	U 0.5	U 0.5	U 0.5
	6/23/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/8/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	12/3/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	6/14/2010	U 0.5	U 0.5	38.3	U 0.5	U 0.5	U 0.5	U 0.5	U 0.5
	12/6/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/13/2011	J 0.07	U 0.08	U 2	U 0.072	J 0.057	U 0.041	U 0.05	U 0.049
	12/6/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/4/2012	J 0.07	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	12/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-5	6/10/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.12	U 0.2
	12/16/2013	2.1	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	8/21/2014	6.2	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/9/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	6/16/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/30/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	6/14/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/29/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/15/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	11/30/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	8/20/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	11/28/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	6/10/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/2/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-6	8/3/1993	U 1	2.3	U 1	1.7	U 1	U 1	5.1	3.7
	1/18/1994	U 2	2	U 5	U 1	U 1	1	5	6
	6/28/1994	U 1	3	U 5	3	U 1	1	6	8
	2/1/1995	U* 1	3	U 5	3	U 1	1	5	12
	6/27/1995	U 1	2	U 1	U 1	U 1	U 1	3	9
	11/28/1995	U 1	1	U 5	2	U 1	1	3	6
	6/25/1996	U 1	U* 1	U 5	2	1	1	2	11
	12/11/1996	U 1	U 1	U 5	2	U 1	U* 1	2	11
	6/19/1997	U 1	U 1	U 1	U 1	U 2	1	U 1	U 2
	12/16/1997	U 1	U 1	U 5	2	U 1	2	U 1	14
	3/23/1998	U 1	U 1	U 5	2	U 1	U 1	2	13
	6/29/1998	U 1	<(2) 1	U 5	1	U 1	<(2) 1	1	15
	9/29/1998	U 1	U 1	U 5	1	U 1	U 1	1	9
	3/15/1999	U 1	U 1	(1) U 5	(1) U 1		(1) U 1	1	9
	6/22/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	9
	9/13/1999	U 1	U 1	(1) U 5	(1) U 1	U 1	U 1	U 1	9
	12/13/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	10
	3/22/2000	U 1	U 1	U 5	(1) U 1	U 1	U 1	(1) U 1	4
	6/7/2000	U 1	U 1	(1) U 5	(1) U 1	U 1	U 1	U 1	3
	9/22/2000	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	3
	11/28/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	3
	3/21/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/11/2001	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	9/19/2001	U 1	(1) U 1	U(1,3) 5	U 1	U 1	(1) U 1	(1) U 1	U 1
	12/18/2001	U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	1	U 1
	3/25/2002	U 1	1	U 5	U 1	U 1	U 1	2	U 1

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Bozeman Landfill
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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-6	6/13/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	1	U 1
	9/24/2002	U 1	1	UJR 5	U 1	U 1	U 1	1	U 1
	12/12/2002	U 1	2	(1) U 5	1	U 1	(1) U 1	2	(1) U 1
	3/24/2003	U 1	(1) U 1	(1) U 5	(1) U 1	(1) U 1	(1) U 1	1	U 1
	6/9/2003	U 1	1	(1) U 5	(1) U 1	U 1	(1) U 1	2	U 1
	9/25/2003	U 1	2	(1) U 5	(1) U 1	U 1	(1) U 1	2	U 1
	12/4/2003	U 1	1	(1) U 5	(1) U 1	U 1	(1) U 1	2	JJF% 1
	3/24/2004	U 1	2	U 5	1	U 1	(1) U 1	2	U 1
	6/8/2004	U 1	2	(1) U 5	(1) U 1	U 1	(1) U 1	2	U 1
	9/9/2004	U 1	1	(1) U 5	(1) U 1	U 1	(1) U 1	2	U 1
	12/7/2004	U 1	2	(1) U 5	(1) U 1	U 1	(1) U 1	2	U 1
	3/29/2005	U 1	2	(1) U 5	1	U 1	(1) U 1	2	U 1
	6/16/2005	U 1	1	U 5	1	U 1	2	2	U 1
	9/20/2005	U 1	2	(1) BU 5	(1) U 1	U 1	(1) U 1	3	U 1
	12/14/2005	U 1	1	(1) U 5	1	U 1	2	2	U 1
	3/16/2006	U 1	(1) U 1	U 5	(1) U 1	U 1	2	1	U 1
	6/13/2006	U 0.5	0.8	(1) U 5	1.1	U 1	2.5	1.1	U 0.5
	9/21/2006	U 0.5	1.8	U(1) 5	U(1) 1	U 1	0.9	2.2	U(1) 0.5
	12/6/2006	U 0.5	1.5	U 5	1	U 1	1.8	1.6	U 0.5
	3/15/2007	U 0.5	1	U 5	1	U 1	1.4	1	U 0.5
	6/20/2007	U 0.5	0.8	U 5	U 1	U 1	1.1	1	JJF% 0.5
	12/10/2007	U 0.5	1.8	U 5	1.1	U(1) 1	1.3	1.9	U 0.5
	6/24/2008	U 0.5	0.8	U(1) 5	U 1	U 1	0.9	0.8	U 0.5
	12/9/2008	U 1	1.8	U 4	1.4	U 1	1.7	2.2	U 0.4
	6/2/2009	U 0.5	1.4	U 2	1.1	U 2	J 0.88	1.3	U 0.2
	12/9/2009	U 0.5	1.8	UB 2	1.3	U 2	1.7	1.8	2.1
	6/15/2010	U 0.5	1.5	19.1	1.1	U 0.5	1.3	1.4	2.4
	12/7/2010	U 1	2.2	U 1	1.1	U 1	1	1.5	5.3
	6/13/2011	J 0.31	1.3	U 2	0.94	U 0.021	0.78	0.96	5.2
	12/5/2011	U 0.05	1	U 5	0.89	U 0.13	1.5	0.88	1.2
	6/5/2012	J 0.21	2.5	U 2	1.1	U 0.13	0.93	1.1	1.8
	12/4/2012	J 0.12	2.1	U 2	0.95	U 0.13	0.97	0.79	1.5
	6/10/2013	U 0.24	2.3	U 2	1.2	U 0.5	0.8	0.82	0.65
	12/16/2013	U 0.24	2.9	U 2	1.3	U 0.5	0.64	0.66	1.2
	8/20/2014	J 0.15	2	U 2	1	U 0.34	0.69	0.63	0.74
	12/9/2014	U 0.07	1.9	U 2	1.3	U 0.34	1	0.77	0.82
	6/17/2015	U 0.21	1.1	U 0.56	0.91	U 0.64	0.79	0.51	0.58
	12/2/2015	U 0.21	2.1	U 0.56	0.82	U 0.64	0.57	0.5	0.9
	6/15/2016	U 0.21	2.1	U 0.56	1.1	U 0.64	0.53	J 0.32	0.23
	11/29/2016	J 0.05	2.3	U 0.097	1.1	U 0.08	0.59	0.44	0.4

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-6	6/14/2017	U 0.04	1.8	U 0.097	1.2	U 0.08	0.6	0.44	0.21
	12/1/2017	U 0.13	2.1	U 1.2	0.98	U 1.1	0.82	0.42	0.49
	8/20/2018	J 0.14	1.6	U 0.98	0.94	J 0.2	0.7	0.45	0.74
	11/29/2018	J 0.21	1.6	U 0.98	0.83	U 0.16	J 0.48	J 0.37	2.1
	6/13/2019	J 0.18	1.8	U 0.98	0.81	U 0.16	J 0.41	J 0.27	1.5
	12/3/2019	J 0.19	1.6	U 0.98	0.87	U 0.48	J 0.31	J 0.26	1.8
MW-6B	6/5/2012	U 0.05	U 0.08	U 2	U 0.5	U 0.13	U 0.16	U 0.11	U 0.16
	12/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/10/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.12	U 0.2
	12/16/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	6/17/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	6/14/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/13/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
MW-7A	1/18/1994	U 2	U 1	12	6	U 1	27	4	U 1
	6/28/1994	U* 1	U 1	18	7	U 1	32	5	U 1
	2/1/1995	U 1	U 1	14	6	U 1	24	4	1
	6/27/1995	2	U 1	JX 17	6	U 1	13	5	U 1
	11/27/1995	U* 1	U 1	10	4	U 1	17	4	1
	6/25/1996	2	U* 1	15	5	U 1	16	6	4
	12/11/1996	U* 1	U 1	10	3	U 1	10	4	2
	6/20/1997	2	U 1	15	4	U 2	13	5	7
	12/16/1997	2	1	JX 18	5	U 1	5	13	5
	3/23/1998	2	U 1	14	4	U 1	11	4	4
	6/30/1998	2	1	15	4	U 1	11	4	6
	9/29/1998	2	1	19	4	U 1	11	4	3
	12/14/1998	2	1	B 21	5	U 1	11	11	4
	3/15/1999	2	(1) U 1	14	4		10	3	3
	6/22/1999	2	U 1	(1) U 5	4	U (1) 5	6	3	4
	9/13/1999	2	(1) U 1	(1) U 5	3	U 1	8	3	3
	12/14/1999	1	U 1	(1) U 5	3	U 1	7	2	2
	3/22/2000	1	U 1	U 5	3	U 1	9	3	2
	6/7/2000	(1) U 1	(1) U 1	(1) U 5	3	U 1	7	U 1	3
	9/22/2000	(1) U 1	U 1	(1) U 5	3	U 1	7	2	3
	11/28/2000	U 1	U 1	U 5	3	U 1	7	2	3
	3/21/2001	U 1	U 1	U 5	4	U 1	11	3	2
	6/11/2001	1	U 1	U 5	4	U 1	12	3	3
	9/19/2001	(1) U 1	U 1	U(1,3) 5	3	U 1	8	2	(1) U 1
	12/17/2001	(1) U 1	(1) U 1	(1) U 5	5	U 1	11	3	2
	3/25/2002	U 1	U 1	U 5	3	U 1	9	2	1
	6/13/2002	(1) U 1	(1) U 1	(1) U 5	5	U 1	10	3	2

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-7A	9/24/2002	U 1	U 1	UJR 5	3	U 1	8	2	1
	12/12/2002	(1) U 1	(1) U 1	(1) U 5	5	U 1	12	3	1
	3/24/2003	(1) U 1	(1) U 1	(1) U 5	3	(1) U 1	9	2	(1) U 1
	6/10/2003	(1) U 1	(1) U 1	(1) U 5	3	U 1	9	2	(1) U 1
	9/25/2003	(1) U 1	(1) U 1	(1) U 5	3	U 1	8	2	(1) U 1
	12/4/2003	(1) U 1	(1) U 1	(1) U 5	4	U 1	7	2	)JF% 1
	3/24/2004	U 1	U 1	(1) U 5	2	U 1	4	(1) U 1	(1) U 1
	6/8/2004	U 1	U 1	(1) U 5	2	U 1	6	1	(1) U 1
	9/9/2004	(1) U 1	U 1	(1) U 5	1	U 1	5	(1) U 1	(1) U 1
	12/7/2004	U 1	U 1	(1) U 5	2	U 1	6	1	(1) U 1
	3/29/2005	U 1	U 1	(1) U 5	1	U 1	3	(1) U 1	(1) U 1
	6/17/2005	U 1	U 1	U 5	2	U 1	6	1	U 1
	9/20/2005	U 1	U 1	(1) BU 5	1	U 1	3	(1) U 1	U 1
	12/14/2005	U 1	U 1	(1) U 5	1	U 1	4	(1) U 1	(1) U 1
	3/16/2006	U 1	U 1	U 5	(1) U 1	U 1	2	(1) U 1	(1) U 1
	6/13/2006	(1) U 0.5	U 0.5	(1) U 5	1.6	U 1	4.2	0.7	(1) U 0.5
	9/21/2006	U(1) 0.5	U 0.5	U(1) 5	U(1) 1	U 1	2.7	U(1) 0.5	U(1) 0.5
	12/7/2006	U 0.5	U 0.5	U 5	U(1) 1	U 1	1.7	U(1) 0.5	U 0.5
	3/15/2007	U 0.5	U 0.5	U 5	1	U 1	2.2	U(1) 0.5	U 0.5
	6/20/2007	0.5	U 0.5	U 5	U 1	U 1	2.3	0.6	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	1.3	U(1) 1	2.4	0.5	U 0.5
	6/24/2008	U 0.5	U 0.5	U(1) 5	1.5	U 1	3.5	0.7	U 0.5
	12/10/2008	U 1	U 1	U 4	2.9	U 1	5.5	1.3	0.53
	6/2/2009	U 0.5	U 0.5	U 2	1.6	U 2	4	J 0.81	U 0.2
	12/9/2009	U 0.5	U 0.5	UB 2	3.1	U 2	5.6	1.4	0.57
	6/16/2010	U 0.5	U 0.5	30.2	1.7	U 0.5	3.4	0.83	U 0.5
	12/7/2010	U 1	U 1	U 1	4.3	U 1	8.6	1.9	U 1
	6/14/2011	0.52	J 0.41	U 2	4.6	U 0.021	7.9	2	0.7
	12/6/2011	0.72	0.67	U 5	5.3	U 0.13	8.3	2.3	0.88
	6/5/2012	0.91	0.94	U 2	6.5	U 0.13	12	3	1.1
	12/5/2012	0.56	0.7	U 2	4.6	U 0.13	7.7	2	0.71
	6/12/2013	J 0.28	0.54	U 2	3.6	U 0.5	5	1.4	J 0.25
	12/17/2013	U 0.24	J 0.47	U 2	3.3	U 0.5	3.9	1.1	0.22
	8/20/2014	J 0.21	0.71	U 2	2.8	U 0.34	6.9	1.8	U 0.082
	12/9/2014	J 0.37	U 0.11	U 2	4.7	U 0.34	7	1.7	0.56
	6/16/2015	J 0.23	U 0.25	U 0.56	3.8	U 0.64	5.3	1.6	J 0.27
	12/2/2015	U 0.21	0.54	U 0.56	2.5	U 0.64	3.9	1.4	0.22
	6/15/2016	J 0.26	0.57	U 0.56	2.9	U 0.64	3.3	1.5	0.25
	11/30/2016	J 0.1	J 0.3	U 0.097	1.6	U 0.08	2.1	0.98	J 0.18
	6/15/2017	J 0.19	0.71	U 0.097	3.1	U 0.08	2.5	2.1	0.43

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-7A	12/1/2017	U 0.13	0.5	U 1.2	1.8	U 1.1	1.9	1.5	J 0.17
	8/23/2018	J 0.36	0.94	U 0.98	2.9	U 0.16	2.3	3	0.5
	11/28/2018	J 0.18	0.66	U 0.98	2	U 0.16	1.8	2	0.29
	6/10/2019	U 0.1	J 0.3	U 0.98	1.5	U 0.16	1.3	1.2	J 0.1
	12/2/2019	J 0.19	0.57	U 0.98	2	U 0.48	1.6	1.7	0.36
MW-7B	8/3/1993	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	1/18/1994	U 2	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/28/1994	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	2/1/1995	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/27/1995	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	12/6/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/5/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/16/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	6/15/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/10/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
MW-8A	1/19/1994	U 2	U 1	U 5	U 1	U 1	5	1	U 1
	6/28/1994	U 1	1	U 5	U 1	U 1	4	3	U 1
	2/1/1995	U 1	1	U 5	1	U 1	4	3	U 1
	6/27/1995	U 1	1	U 1	1	U 1	2	3	U 1
	11/28/1995	U 1	1	U* 5	2	U 1	3	3	U 1
	6/25/1996	U 1	2	U 5	2	U 1	3	3	U 1
	12/12/1996	U 1	1	U 5	1	U 1	2	3	U 1
	6/19/1997	U 1	1	U 1	1	U 2	2	2	U 2
	12/16/1997	U 1	3	U 5	1	U 1	3	3	U 1
	6/30/1998	U 1	4	<(2) 5	2	U 1	4	5	U 1
	12/15/1998	U 1	5	U(1)B 5	1	(1) U 1	4	4	U 1
	6/22/1999	U 1	3	(1) U 5	U 1	U 1	2	3	U 1
	12/14/1999	U 1	3	(1) U 5	(1) U 1	U 1	2	3	U 1
	6/8/2000	U 1	2	(1) U 5	(1) U 1	U 1	2	3	U 1
	11/29/2000	U 1	2	U 5	U 1	U 1	2	2	U 1
	6/12/2001	U 1	1	U 5	U 1	U 1	2	2	U 1
	12/18/2001	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	1	U 1
	6/14/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	1	U 1
	12/13/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	6/10/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	12/3/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	JJF% 1
	6/8/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	12/7/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/16/2005	U 1	U 1	(1) U 5	U 1	U 1	(1) U 1	(1) U 1	U 1
	12/14/2005	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1

Notes: µg/L - micrograms per liter
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- Value greater than the HHS

Vinyl Chloride concentration highlighted only if greater than 2 micrograms per liter (EPA Maximum Contaminant Level). Montana HHS is greater than 0.2 micrograms per liter (not highlighted).

TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-8A	6/13/2006	U 0.5	(1) U 0.5	(1) U 5	(1) U 1	U 1	0.7	(1) U 0.5	U 0.5
	12/6/2006	U 0.5	U 0.5	U 5	U(1) 1	U(1) 1	0.7	U(1) 0.5	U 0.5
	6/20/2007	U 0.5	U 0.5	U 5	U 1	U 1	0.8	U 0.5	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	U 1	U(1) 1	0.6	U 0.5	U 0.5
	6/24/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	0.6	U(1) 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	J 0.86	U 0.5	U 0.2
	12/9/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	J 0.85	U 0.5	U 0.2
	6/15/2010	U 0.5	U 0.5	20	U 0.5	U 0.5	0.81	U 0.5	U 0.5
	12/7/2010	U 1	U 1	U 1	U 1	U 1	1.3	U 1	U 1
	6/14/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	0.64	J 0.28	U 0.049
	12/5/2011	U 0.05	J 0.42	U 5	U 0.072	U 0.13	0.6	J 0.3	U 0.16
	6/5/2012	U 0.05	J 0.46	U 2	U 0.072	U 0.13	0.8	J 0.35	U 0.16
	12/4/2012	U 0.05	0.62	U 2	U 0.072	U 0.13	0.65	J 0.28	U 0.16
	6/12/2013	U 0.24	0.77	U 2	U 0.25	U 0.5	0.68	J 0.33	U 0.2
	12/16/2013	U 0.24	0.96	U 2	U 0.25	U 0.5	0.63	J 0.34	U 0.1
	3/27/2014	U 0.24	0.95	U 2	U 0.25	U 0.5	0.65	J 0.35	U 0.1
	8/20/2014	U 0.07	1.2	U 2	U 0.077	U 0.34	1.3	J 0.36	U 0.082
	12/8/2014	U 0.07	1.4	U 2	U 0.087	U 0.34	0.99	0.58	U 0.082
	6/17/2015	U 0.21	0.65	U 0.56	U 0.22	U 0.64	0.84	J 0.38	U 0.081
	12/2/2015	U 0.21	1.1	U 0.56	U 0.22	U 0.64	0.84	J 0.37	U 0.081
	6/14/2016	U 0.21	1	U 0.56	U 0.22	U 0.64	0.81	J 0.39	U 0.081
	11/29/2016	U 0.04	1.2	U 0.097	U 0.055	U 0.08	0.84	0.41	U 0.098
	6/14/2017	U 0.04	1.3	U 0.097	U 0.055	U 0.08	0.7	J 0.32	U 0.098
	12/1/2017	U 0.13	1.2	U 1.2	U 0.14	U 1.1	0.95	J 0.35	U 0.096
	8/23/2018	U 0.1	0.63	U 0.98	U 0.17	U 0.16	0.7	U 0.15	U 0.092
	11/28/2018	U 0.1	0.59	U 0.98	U 0.17	U 0.16	0.69	J 0.21	U 0.092
	6/12/2019	U 0.1	0.52	U 0.98	U 0.17	U 0.16	0.52	U 0.15	U 0.092
	12/2/2019	U 0.1	0.51	U 0.98	U 0.17	U 0.48	0.56	U 0.15	U 0.092
MW-8B	2/1/1995	U 1	2	U 5	1	U 1	4	3	U 1
	12/5/2011	U 0.05	J 0.29	U 5	U 0.072	U 0.13	0.81	J 0.43	U 0.16
	6/5/2012	J 0.06	J 0.23	U 2	U 0.072	U 0.13	0.83	J 0.38	U 0.16
	6/17/2015	U 0.21	J 0.29	U 0.56	U 0.22	U 0.64	0.78	J 0.38	U 0.081
	6/14/2017	U 0.04	1.2	U 0.097	U 0.055	U 0.08	0.72	J 0.33	U 0.098
	6/12/2019	U 0.1	0.95	U 0.98	U 0.17	U 0.16	0.68	J 0.24	U 0.092
MW-8C	6/5/2012	J 0.06	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	12/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/12/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.12	U 0.2
	12/16/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	6/17/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081

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- Value greater than the HHS

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TABLE 4
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Bozeman Landfill
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Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-8C	6/14/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/12/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
MW-9A	1/18/1994	U 2	U 1	U 5	2	U 1	4	2	U 1
	6/27/1994	U 1	U 1	U 5	2	U 1	5	2	U 1
	1/31/1995	U 1	U* 1	U 5	1	U 1	4	2	U 1
	6/27/1995	U 1	U 1	U 1	1	U 1	2	U 1	U 1
	11/28/1995	U 1	U 1	U* 5	1	U 1	3	1	U 1
	6/25/1996	U 1	U 1	U 5	U* 1	U 1	2	U* 1	U 1
	12/11/1996	U 1	U 1	U 5	U 1	U 1	2	U* 1	U 1
	6/19/1997	U 1	U 1	U 1	U 1	U 2	1	U 1	U 2
	12/16/1997	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	6/29/1998	U 1	U 1	5	(2) U 1	< (2) 1	1	U(2) 1	U 1
	12/14/1998	U 1	U 1	U(1)B 5	(1) U 1	(1) U 1	1	1	U 1
	6/22/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/13/1999	U 1	U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	6/7/2000	U 1	U 1	(1) U 5	(1) U 1	U 1	U 1	(1) U 1	U 1
	11/28/2000	U 1	U 1	U 5	U 1	U 1	2	U 1	U 1
	6/11/2001	U 1	U 1	U 5	1	U 1	2	1	U 1
	12/17/2001	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	2	1	U 1
	6/13/2002	U 1	1	(1) U 5	(1) U 1	U 1	2	1	U 1
	12/12/2002	U 1	1	(1) U 5	(1) U 1	U 1	2	1	U 1
	6/9/2003	U 1	(1) U 1	(1) U 5	(1) U 1	(1) U 1	1	(1) U 1	U 1
	12/4/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	JJF% 1
	6/8/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	12/7/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	6/16/2005	U 1	(1) U 1	(1) U 5	U 1	U 1	1	(1) U 1	U 1
	12/14/2005	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	1	(1) U 1	U 1
	6/13/2006	U 0.5	0.5	(1) U 5	(1) U 1	U 1	1	0.5	U 0.5
	12/6/2006	U 0.5	U(1) 0.5	U 5	U(1) 1	U 1	0.9	0.5	U 0.5
	6/20/2007	U 0.5	U 0.5	U 5	U 1	U 1	0.8	0.5	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	U 1	U(1) 1	0.6	U(1) 0.5	U 0.5
	6/24/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	0.7	U(1) 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	1.2	J 0.55	U 0.2
	12/4/2009	U 0.5	J 0.62	UB 2	U 0.5	U 2	1.2	J 0.71	U 0.2
	6/15/2010	U 0.5	0.59	17.7	U 0.5	U 0.5	1.1	0.71	U 0.5
	12/7/2010	U 1	U 1	U 1	U 1	U 1	1.1	U 1	U 1
	6/14/2011	U 0.04	J 0.44	U 2	J 0.18	U 0.021	0.95	0.64	U 0.049
	12/5/2011	U 0.05	J 0.48	U 5	J 0.28	U 0.13	0.95	0.75	U 0.16
	6/4/2012	J 0.07	J 0.47	U 2	J 0.27	U 0.13	1.4	0.95	U 0.16

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-9A	12/4/2012	U 0.05	J 0.46	U 2	J 0.31	U 0.13	1.2	0.78	U 0.16
	6/10/2013	U 0.24	0.54	U 2	J 0.4	U 0.5	1.4	0.95	U 0.2
	12/17/2013	U 0.24	0.68	U 2	J 0.42	U 0.5	1.2	0.85	U 0.1
	8/20/2014	U 0.07	J 0.37	U 2	U 0.077	U 0.34	1.7	0.82	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	0.51	U 0.34	1.6	1.4	U 0.082
	6/16/2015	U 0.21	U 0.25	U 0.56	J 0.44	U 0.64	1.5	0.88	U 0.081
	11/30/2015	U 0.21	0.64	U 0.56	J 0.37	U 0.64	1.3	0.92	U 0.081
	6/14/2016	U 0.21	0.64	U 0.56	J 0.38	U 0.64	1.4	0.97	U 0.081
	11/29/2016	U 0.04	0.75	U 0.097	J 0.4	U 0.08	1.1	0.9	U 0.098
	6/14/2017	U 0.04	0.75	U 0.097	J 0.43	U 0.08	1.1	1.1	U 0.098
	11/30/2017	U 0.13	0.91	U 1.2	J 0.46	U 1.1	1.5	0.88	U 0.096
	8/20/2018	U 0.1	0.73	U 0.98	J 0.39	J 0.24	1.4	0.79	U 0.092
	11/29/2018	U 0.1	0.76	U 0.98	J 0.38	U 0.16	1.3	0.82	U 0.092
	6/10/2019	U 0.1	0.66	U 0.98	J 0.29	U 0.16	1.3	0.67	U 0.092
	12/2/2019	U 0.1	0.76	U 0.98	J 0.36	U 0.48	1.3	0.65	U 0.092
MW-9B	1/31/1995	U 1	U* 1	U 5	U* 1	U 1	4	2	U 1
	12/5/2011	U 0.05	0.67	U 5	J 0.28	U 0.13	1.2	1.1	U 0.16
	6/4/2012	J 0.05	0.53	U 2	J 0.19	U 0.13	1.4	1	U 0.16
	6/16/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1	0.94	U 0.081
	6/14/2017	U 0.04	0.66	U 0.097	U 0.055	U 0.08	0.91	0.69	U 0.098
	6/10/2019	U 0.1	0.68	U 0.98	U 0.17	U 0.16	0.93	0.61	U 0.092
MW-10	6/27/1994	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	2/2/1995	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	6/28/1995	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	11/28/1995	U 1	U 1	U* 5	U 1	U 1	U* 1	U* 1	U 1
	6/26/1996	U 1	U 1	U 5	U 1	U 1	U 1	U* 1	U 1
	12/12/1996	U 1	U 1	U 5	U 1	U* 1	U 1	U* 1	U 1
	6/20/1997	U 1	U 1	U 1	U 1	U 2	U 1	U 1	U 2
	12/17/1997	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/29/1998	U 1	U 1	U(3) 5	U 1	3	U 1	1	U 1
	12/15/1998	U 1	U 1	U(1)B 5	U 1	(1) U 1	(1) U 1	(1) U 1	U 1
	6/23/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	12/13/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	6/8/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	11/29/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2001	U 1	U 1	U 5	U 1	U 1	U 1	1	U 1
	12/18/2001	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	1	U 1
	6/14/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	12/12/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	1	U 1
	6/10/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-10	12/3/2003	U 1	(1) U 1	(1) U 5	U 1	U 1	(1) U 1	1	JJF% 1
	6/8/2004	U 1	(1) U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	6/17/2005	U 1	(1) U 1	B U 5	U 1	U 1	U 1	(1) U 1	U 1
	12/13/2005	U 1	(1) U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/13/2006	U 0.5	(1) U 0.5	(1) U 5	(1) U 1	U 1	U 0.5	0.6	U 0.5
	12/6/2006	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	0.6	U 0.5
	6/19/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	0.7	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	U 1	U(1) 1	U 0.5	0.6	U 0.5
	6/26/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/2/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	J 0.66	U 0.2
	12/4/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	U 0.5	J 0.82	U 0.2
	6/16/2010	U 0.5	U 0.5	42.4	U 0.5	U 0.5	U 0.5	0.78	U 0.5
	12/6/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/14/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	U 0.041	0.7	U 0.049
	12/6/2011	U 0.05	J 0.26	U 5	U 0.072	U 0.13	U 0.16	0.57	U 0.16
	6/4/2012	J 0.09	J 0.2	U 2	U 0.072	U 0.13	U 0.16	0.58	U 0.16
	12/5/2012	U 0.05	J 0.17	U 2	U 0.072	U 0.13	U 0.16	J 0.5	U 0.16
	6/12/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	J 0.39	U 0.2
	3/27/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	J 0.33	U 0.1
	8/21/2014	U 0.07	J 0.18	U 2	U 0.077	U 0.34	U 0.099	0.49	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	0.67	U 0.082
	6/15/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	J 0.39	U 0.081
	12/1/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	0.52	U 0.081
	6/16/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	J 0.4	U 0.081
	11/28/2016	U 0.04	J 0.25	U 0.097	U 0.055	U 0.08	U 0.13	0.45	U 0.098
	6/16/2017	U 0.04	J 0.19	U 0.097	U 0.055	U 0.08	U 0.13	J 0.33	U 0.098
	11/29/2017	U 0.13	J 0.43	U 1.2	U 0.14	U 1.1	U 0.16	J 0.4	U 0.096
	8/22/2018	U 0.1	J 0.19	U 0.98	U 0.17	J 0.48	U 0.17	J 0.39	U 0.092
	11/27/2018	U 0.1	J 0.23	U 0.98	U 0.17	U 0.16	U 0.17	J 0.32	U 0.092
	6/12/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	J 0.3	U 0.092
	12/3/2019	U 0.1	J 0.27	U 0.98	U 0.17	U 0.48	U 0.17	J 0.25	U 0.092
MW-11	11/27/1995	U 1	U 1	U* 5	U 1	U 1	U 1	U 1	U 1
	6/26/1996	U 1	U 1	U 5	U 1	U* 1	U 1	U 1	U 1
	12/12/1996	U 1	U 1	U 5	U 1	U* 1	U 1	U 1	U 1
	6/19/1997	U 1	U 1	U 1	U 1	U 2	U 1	U 1	U 2
	12/16/1997	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/30/1998	U 1	U 1	U(3) 5	U 1	U(3) 1	U 1	U 1	U 1
	12/14/1998	U 1	U 1	U(1)B 5	U 1	(1) U 1	U 1	U 1	U 1

Notes: µg/L - micrograms per liter
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- Value greater than the HHS

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TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-11	6/22/1999	U 1	U 1	(1) U 5	U 1	1	U 1	U 1	U 1
	12/14/1999	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/8/2000	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	11/29/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/18/2001	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/14/2002	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	U 1	U 1
	12/13/2002	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/10/2003	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	12/3/2003	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	U 1	JJF% 1
	6/8/2004	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	U 1
	6/16/2005	U 1	U 1	(1) U 5	U 1	U 1	(1) U 1	U 1	U 1
	12/13/2005	U 1	U 1	(1) U 5	U 1	U 1	(1) U 1	(1) U 1	U 1
	6/13/2006	U 0.5	U 0.5	(1) U 5	(1) U 1	U 1	0.6	(1) U 0.5	U 0.5
	12/6/2006	U 0.5	U 0.5	U(1) 5	U 1	U 1	0.6	U 0.5	U 0.5
	6/20/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 2	U 1	U(1) 1	U 0.5	U 0.5	U 0.5
	6/24/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U(1) 0.5	U 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	12/4/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	J 0.54	U 0.5	U 0.2
	6/15/2010	U 0.5	U 0.5	27.7	U 0.5	U 0.5	U 0.5	U 0.5	U 0.5
	12/7/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/14/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	U 0.041	U 0.05	U 0.049
	12/5/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	J 0.25	U 0.11	U 0.16
	6/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	J 0.32	U 0.11	U 0.16
	12/5/2012	U 0.05	U 0.08	U 2	J 0.2	U 0.13	J 0.34	U 0.11	U 0.16
	6/12/2013	U 0.24	U 0.23	U 2	J 0.28	U 0.5	J 0.38	U 0.12	U 0.2
	12/17/2013	U 0.24	U 0.23	U 2	J 0.31	U 0.5	J 0.41	U 0.13	U 0.1
	8/19/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	J 0.36	U 0.084	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	J 0.37	U 0.084	U 0.082
	6/17/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	J 0.26	U 0.14	U 0.081
	12/2/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	J 0.25	U 0.14	U 0.081
	6/14/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/29/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	J 0.2	U 0.044	U 0.098
	6/14/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	12/4/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	8/22/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 0.68	J 0.33	U 0.15	U 0.092
	11/28/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	J 0.2	U 0.15	U 0.092

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-11	6/10/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/2/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-12	11/27/1995	9	12	U* 5	4	U 1	1	11	50
	6/26/1996	11	10	U 5	5	U* 1	U* 1	9	81
	12/12/1996	7	6	U 5	4	U 1	U* 1	9	49
	6/20/1997	8	2	U 1	3	U 2	U 1	2	99
	12/16/1997	6	1	U 5	3	U 1	1	U 1	48
	3/24/1998	5	U 1	U 5	3	U 1	U 1	1	44
	6/30/1998	4	U(3) 1	U(3) 5	2	U 1	U 1	U(3) 1	43
	9/29/1998	3	U 1	U 5	2	U 1	U 1	1	29
	12/15/1998	3	U 1	UB 5	2	(1) U 1	U 1	U 1	22
	3/17/1999	2	(1) U 1	(1) U 5	1	U 1	U 1	U 1	22
	6/23/1999	2	U 1	(1) U 5	U 1	U 1	U 1	U 1	23
	9/13/1999	2	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	25
	12/14/1999	2	(1) U 1	(1) U 5	U 1	U 1	U 1	U 1	25
	3/22/2000	1	(1) U 1	U 5	(1) U 1	U 1	U 1	U 1	16
	6/8/2000	1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	27
	9/22/2000	2	U 1	U 5	1	U 1	U 1	U 1	33
	11/29/2000	2	U 1	U 5	U 1	U 1	U 1	U 1	29
	3/21/2001	2	U 1	U 5	1	U 1	U 1	U 1	19
	6/12/2001	1	U 1	U 5	U 1	U 1	U 1	1	18
	9/19/2001	1	1	U(1,3) 5	(1) U 1	U 1	U 1	1	16
	12/18/2001	2	2	(1) U 5	1	U 1	(1) U 1	2	20
	3/25/2002	1	2	U 5	1	U 1	U 1	3	21
	6/14/2002	1	2	(1) U 5	(1) U 1	U 1	U 1	2	22
	9/24/2002	1	3	UJR 5	U 1	U 1	U 1	3	15
	12/13/2002	1	4	U 5	(1) U 1	U 1	(1) U 1	4	22
	3/24/2003	1	4	(1) U 5	(1) U 1	(1) U 1	U 1	5	16
	6/10/2003	1	5	(1) U 5	(1) U 1	U 1	(1) U 1	6	14
	9/25/2003	1	6	(1) U 5	1	U 1	(1) U 1	8	19
	12/4/2003	2	6	(1) U 5	1	U 1	(1) U 1	8	JF% 27
	3/24/2004	2	7	U 5	1	U 1	(1) U 1	8	24
	6/8/2004	1	7	(1) U 5	1	U 1	(1) U 1	7	15
	9/9/2004	1	7	(1) U 5	1	U 1	(1) U 1	9	17
	12/7/2004	1	7	(1) U 5	1	U 1	(1) U 1	8	16
	3/29/2005	1	7	(1) U 5	1	U 1	(1) U 1	7	19
	6/17/2005	(1) U 1	7	B U 5	1	U 1	1	8	16
	9/20/2005	1	7	(1) BU 5	1	U 1	1	7	12
	12/14/2005	(1) U 1	6	(1) U 5	1	U 1	1	6	15
	3/16/2006	(1) U 1	6	U 5	(1) U 1	U 1	1	6	19

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-12	6/13/2006	1.2	8.3	(1) U 5	1	U 1	1.2	6.8	13
	9/21/2006	0.8	5.9	U(1) 5	U(1) 1	U 1	1.5	6.3	12.5
	12/7/2006	0.5	3.6	U 5	U(1) 1	U 1	U(1) 0.5	2.8	4.4
	3/15/2007	0.9	7.4	U 5	1	U 1	3	7	11.5
	6/21/2007	1	8.2	U 5	U 1	U 1	1.8	6.5	JF% 21
	12/11/2007	0.9	10	U 5	1.2	U 1	1.2	7.5	19
	6/25/2008	0.9	7.1	U(1) 5	U(1) 1	U 1	0.6	5.1	16
	12/10/2008	1.5	7.7	U 4	U 1	U 1	U 1	5.7	13.3
	6/2/2009	1.9	8	U 2	J 0.91	U 2	U 0.5	5.1	19.7
	12/9/2009	2.5	11.6	UB 2	1.2	U 2	U 0.5	6.7	26.4
	6/15/2010	2.2	9.6	22.3	1.1	U 0.5	U 0.5	4.4	27.4
	12/7/2010	1.8	11.3	U 1	1.5	U 1	U 1	4.5	J 30.4
	6/14/2011	2	4.4	U 2	1.4	U 0.021	U 0.041	1.9	J 24.9
	12/6/2011	2.1	9.6	U 5	1.7	U 0.13	U 0.16	4.3	17.4
	6/5/2012	2	10.8	U 2	2	U 0.13	U 0.16	3.5	20.7
	12/5/2012	1.5	9.1	U 2	1.7	U 0.13	U 0.16	1.5	21.2
	6/12/2013	1.4	11.1	U 2	1.9	U 0.5	U 0.25	1	17.7
	12/17/2013	1.5	6.6	U 2	1.5	U 0.5	U 0.25	0.42	22.4
	3/27/2014	1.7	3.9	U 2	1.2	U 0.5	U 0.25	J 0.25	19.7
	8/19/2014	1.1	7.2	U 2	0.99	U 0.34	U 0.099	J 0.29	10.7
	12/8/2014	1.3	5.5	U 2	1	U 0.34	U 0.12	U 0.084	17
	6/17/2015	1	6.8	U 0.56	0.87	J 0.9	U 0.19	J 0.26	10.5
	12/2/2015	1.2	6.5	U 0.56	1.1	U 0.64	U 0.19	U 0.14	11
	6/14/2016	1.1	8.3	U 0.56	1.1	U 0.64	U 0.19	U 0.14	10.5
	8/25/2016	1.2	9.8	U 0.097	1.1	U 0.08	U 0.13	U 0.051	10.2
	11/29/2016	0.9	6.2	U 0.097	1.1	U 0.08	U 0.13	U 0.044	7.9
	4/17/2017	0.72	7.4	U 0.097	1.1	U 0.08	U 0.13	U 0.044	8.7
	6/14/2017	0.7	6.1	U 0.097	1.1	U 0.08	U 0.13	U 0.044	9
	9/20/2017	0.79	8	U 1.2	0.9	U 1.1	U 0.16	U 0.18	5.9
	12/4/2017	0.78	6.3	U 1.2	0.98	U 1.1	U 0.16	U 0.18	6.3
	3/27/2018	0.74	7.7	U 1.2	0.74	U 1.1	U 0.16	U 0.18	5.3
	8/22/2018	1	6.9	U 0.98	1.2	U 0.16	U 0.17	J 0.21	9.4
	10/16/2018	0.64	5.1	U 0.98	0.94	U 0.16	U 0.17	U 0.15	8.7
	11/28/2018	0.54	5.4	U 0.98	0.96	U 0.16	U 0.17	J 0.29	10
	3/27/2019	0.86	8.5	U 0.98	1.5	U 0.16	U 0.17	J 0.32	9.7
	6/10/2019	0.82	6.8	U 0.98	1.7	U 0.16	U 0.17	0.73	15.1
	9/23/2019	0.57	8.7	U 0.98	1.5	U 0.16	U 0.17	J 0.39	6.4
	12/2/2019	0.6	9.1	U 0.98	1.6	U 0.48	U 0.17	0.8	8.3
MW-13	11/28/1995	1	U 1	U* 5	2	U 1	U* 1	2	21
	6/25/1996	1	U* 1	U 5	3	U 1	U* 1	1	41

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-13	12/11/1996	1	U* 1	U 5	2	U 1	U 1	U 1	28
	6/20/1997	U 1	1	U 1	1	U 2	1	2	26
	12/16/1997	1	U 1	U 5	2	U 1	2	U 1	29
	3/23/1998	1	U 1	U 5	2	U 1	U 1	1	29
	6/30/1998	1	(3) U 1	U 5	1	U 1	(3) U 1	1	34
	9/29/1998	1	U 1	U 5	1	U 1	U 1	1	24
	12/14/1998	1	(1) U 1	U(1)B 5	1	(1) U 1	(1) U 1	(1) U 1	24
	3/15/1999	(1) U 1	U 1	6	(1) U 1	U 1	U 1	(1) U 1	19
	6/23/1999	(1) U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	23
	9/13/1999	(1) U 1	U 1	U 5	U 1	U 1	U 1	(1) U 1	26
	12/14/1999	(1) U 1	U 1	(1) U 5	(1) U 1	U 1	U 1	(1) U 1	27
	3/22/2000	(1) U 1	U 1	U 5	(1) U 1	U 1	U 1	(1) U 1	18
	6/8/2000	(1) U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	23
	9/22/2000	(1) U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	24
	11/29/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	22
	3/21/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	15
	6/12/2001	1	U 1	U 5	U 1	U 1	U 1	U 1	19
	9/19/2001	(1) U 1	(1) U 1	U(1,3) 5	(1) U 1	U 1	(1) U 1	(1) U 1	12
	12/18/2001	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	10
	3/25/2002	U 1	U 1	U 5	U 1	U 1	U 1	U 1	11
	6/13/2002	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	12
	9/24/2002	U 1	U 1	UJR 5	U 1	U 1	U 1	U 1	10
	12/13/2002	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	12
	3/24/2003	(1) U 1	(1) U 1	(1) U 5	(1) U 1	(1) U 1	(1) U 1	(1) U 1	8
	6/10/2003	(1) U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	7
	9/25/2003	(1) U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	13
	12/4/2003	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	JF% 15
	3/24/2004	(1) U 1	U 1	U 5	1	U 1	(1) U 1	(1) U 1	13
	6/8/2004	(1) U 1	(1) U 1	(1) U 5	(1) U 1	U 1	(1) U 1	(1) U 1	8
	9/9/2004	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	11
	12/7/2004	(1) U 1	(1) U 1	(1) U 5	1	U 1	U 1	(1) U 1	9
	3/29/2005	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	11
	6/17/2005	(1) U 1	U 1	U 5	1	U 1	U 1	(1) U 1	9
	9/20/2005	(1) U 1	(1) U 1	(1) BU 5	1	U 1	(1) U 1	(1) U 1	8
	12/14/2005	(1) U 1	(1) U 1	(1) U 5	1	U 1	(1) U 1	(1) U 1	9
	3/16/2006	U 1	(1) U 1	U 5	(1) U 1	U 1	(1) U 1	(1) U 1	11
	6/13/2006	0.6	0.7	(1) U 5	(1) U 1	U 1	(1) U 0.5	(1) U 0.5	7.1
	9/21/2006	0.6	U(1) 0.5	U(1) 5	U(1) 1	U 1	U(1) 0.5	U(1) 0.5	7.6
	12/7/2006	0.5	0.7	U 5	U(1) 1	U 1	U 0.5	U(1) 0.5	9.7
	3/15/2007	U(1) 0.5	0.8	U 5	1	U 1	U(1) 0.5	U 0.5	9.6

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Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-13	6/20/2007	0.6	1	U 5	1	U 1	U 0.5	0.6	JF% 20
	12/11/2007	0.6	0.9	U 5	1.2	U 1	U 0.5	U(1) 0.5	18
	6/24/2008	U(1) 0.5	0.8	U(1) 5	U 1	U 1	U(1) 0.5	0.5	15
	12/10/2008	U 1	1.3	U 4	1.3	U 1	U 1	U 1	20.2
	6/2/2009	J 0.53	1.1	U 2	J 0.96	U 2	U 0.5	J 0.61	14.6
	12/9/2009	J 0.69	1.1	UB 2	1.2	U 2	U 0.5	J 0.61	22.5
	6/16/2010	0.68	1.1	36.3	1	U 0.5	U 0.5	0.55	19.9
	12/7/2010	U 1	U 1	U 1	1.1	U 1	U 1	U 1	J 23.8
	6/15/2011	0.61	0.99	U 2	0.96	U 0.021	J 0.25	0.55	J 17.9
	12/7/2011	0.79	1	U 5	1	U 0.13	J 0.29	0.5	17.7
	6/6/2012	0.69	1.1	U 2	0.98	U 0.13	J 0.33	J 0.46	19.3
	12/5/2012	0.66	1.1	U 2	1.1	U 0.13	J 0.23	J 0.41	20.9
	6/12/2013	0.72	1.2	U 2	1.5	U 0.5	J 0.26	J 0.36	21.1
	12/17/2013	0.59	1.1	U 2	1.5	U 0.5	U 0.25	J 0.32	18.9
	3/27/2014	0.68	1.1	U 2	1.5	U 0.5	U 0.25	J 0.31	17.1
	8/19/2014	0.59	0.82	U 2	0.83	U 0.34	J 0.25	0.45	11.7
	12/9/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	J 0.14	0.41	16.7
	6/16/2015	0.6	J 0.27	U 0.56	0.89	U 0.64	J 0.23	J 0.34	11.6
	12/2/2015	J 0.46	0.77	U 0.56	0.8	U 0.64	J 0.21	J 0.35	9
	6/15/2016	0.67	1	U 0.56	1.1	U 0.64	U 0.19	J 0.39	11.2
	11/30/2016	J 0.46	0.92	U 0.097	0.95	U 0.08	U 0.13	J 0.37	8.4
	6/15/2017	0.51	1.2	U 0.097	1.1	U 0.08	U 0.13	0.61	9.7
	12/1/2017	0.51	1.1	U 1.2	0.93	U 1.1	U 0.16	J 0.39	6.7
	8/23/2018	0.57	1	U 0.98	0.84	J 0.69	J 0.31	0.49	6.1
	11/29/2018	0.61	0.81	U 0.98	0.73	U 0.16	U 0.17	J 0.31	8.7
	6/10/2019	0.51	0.93	U 0.98	0.83	U 0.16	U 0.17	J 0.21	9.7
	12/2/2019	0.53	0.95	U 0.98	U 0.17	U 0.48	U 0.17	J 0.26	10.2
MW-14	3/22/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/11/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/12/2002	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/9/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/3/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	JJF% 1
	6/8/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/16/2005	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/14/2005	U 1	U 1	(1) U 5	U 1	U 1	U 1	(1) U 1	U 1
	6/13/2006	U 0.5	U 0.5	(1) U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/7/2006	U 0.5	U 0.5	U 5	U 1	U(1) 1	U 0.5	U 0.5	U 0.5
	6/21/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	JJF% 0.5
	12/11/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5

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TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-14	6/25/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/10/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/3/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	12/10/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	6/15/2010	U 0.5	U 0.5	19.7	U 0.5	U 0.5	U 0.5	U 0.5	U 0.5
	12/6/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/15/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	U 0.041	U 0.05	U 0.049
	12/5/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	12/17/2013	U 0.24	U 0.23	U 2	U 0.25	J 0.96	U 0.25	U 0.13	U 0.1
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
MW-15	10/8/2001	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/11/2002	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/10/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/3/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	JJF% 1
	6/8/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/16/2005	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/14/2005	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2006	U 0.5	U 0.5	(1) U 5	U 1	U 1	(1) U 0.5	U 0.5	U 0.5
	12/5/2006	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	6/19/2007	U 0.5	U 0.5	U 5	U 1	1.2	U 0.5	U 0.5	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	6/23/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/8/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/1/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	12/4/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	6/14/2010	U 0.5	U 0.5	32.9	U 0.5	U 0.5	U 0.5	U 0.5	U 0.5
	12/6/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/13/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	U 0.041	U 0.05	U 0.049
	12/6/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/4/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	12/5/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/10/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.12	U 0.2
	12/16/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	3/27/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	8/20/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	6/16/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/30/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-15	6/14/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/29/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/15/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	11/30/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	8/20/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 0.61	U 0.17	U 0.15	U 0.092
	11/28/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	6/10/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/2/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-16	6/4/2012	U 0.05	3.4	U 2	1.4	U 0.13	2.2	2.9	U 0.16
	12/4/2012	U 0.05	3.4	U 2	1	U 0.13	1.2	2	U 0.16
	6/10/2013	U 0.24	4.3	U 2	1.5	U 0.5	1.4	2.1	U 0.2
	12/17/2013	U 0.24	4.3	U 2	1.5	U 0.5	1	1.4	U 0.1
MW-17	3/25/2014	J 0.38	24.5	J 5	0.57	U 0.5	15.9	5.9	1.5
	5/1/2014	J 0.08	27.6	5.1	0.74	U 0.34	16	5.8	2.3
	8/19/2014	J 0.1	27.4	4.7	0.63	U 0.34	24.8	7.4	1
	12/9/2014	J 0.34	33	4.2	U 0.087	U 0.34	21.8	7.7	1.5
	6/17/2015	U 0.21	22	4.5	0.6	U 0.64	15.7	5.4	0.93
	12/2/2015	U 0.21	16.3	J 2.9	J 0.36	U 0.64	12.5	4.4	0.45
	6/14/2016	U 0.21	9.3	J 2.1	U 0.22	U 0.64	7	2.5	0.26
	8/25/2016	U 0.04	5.6	J 0.34	U 0.055	U 0.08	4	1.4	J 0.14
	11/30/2016	U 0.04	8.4	J 1.5	U 0.055	U 0.08	3.2	1.4	U 0.098
	4/18/2017	U 0.04	6.5	J 0.23	U 0.055	U 0.08	4.5	2	U 0.098
	6/14/2017	U 0.04	7.4	J 0.57	U 0.055	U 0.08	3.8	2	U 0.098
	9/20/2017	U 0.13	4.9	U 1.2	U 0.14	U 1.1	3.7	1.5	U 0.096
	12/4/2017	U 0.13	5.6	U 1.2	U 0.14	U 1.1	3.8	1.6	U 0.096
	3/27/2018	U 0.13	6	U 1.2	U 0.14	U 1.1	4	1.7	U 0.096
	8/21/2018	U 0.1	16.2	6.2	0.55	U 0.16	3.5	2.1	U 0.092
	10/16/2018	U 0.1	17.2	7.7	0.59	U 0.16	4.5	2.6	J 0.13
	11/28/2018	U 0.1	18.7	9.4	0.79	U 0.16	6.2	3.2	0.35
	3/27/2019	U 0.1	25.4	14.6	0.89	U 0.16	8.9	3.6	0.43
	6/13/2019	U 0.1	27.5	14.2	0.93	U 0.16	10	4.7	0.56
	9/23/2019	U 0.1	21.4	12.6	0.81	U 0.16	6.7	3.9	0.3
	12/2/2019	U 0.1	24.4	12.3	0.85	U 0.48	8.9	4.4	0.3
MW-18	5/2/2014	0.66	18.5	U 2	0.56	U 0.34	0.87	J 0.38	3.3
	8/20/2014	1.3	19	U 2	0.65	U 0.34	0.94	0.49	2.5
	12/9/2014	1.3	17.1	U 2	U 0.087	U 0.34	0.51	0.5	3.9
	6/16/2015	1.1	13.4	U 0.56	J 0.37	U 0.64	J 0.23	0.47	3.2
	12/2/2015	0.93	9.6	U 0.56	J 0.34	U 0.64	U 0.19	0.42	3.9
	6/14/2016	0.94	6.8	U 0.56	U 0.22	U 0.64	U 0.19	J 0.29	3.5
	8/25/2016	1.2	7.2	U 0.097	U 0.055	U 0.08	U 0.13	J 0.3	5

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-18	11/30/2016	0.85	4.1	U 0.097	U 0.055	U 0.08	U 0.13	J 0.35	4.1
	4/18/2017	1.1	4.3	U 0.097	U 0.055	U 0.08	U 0.13	J 0.27	5.4
	6/15/2017	J 0.48	1.5	U 0.097	U 0.055	U 0.08	U 0.13	J 0.3	2.1
	9/21/2017	0.61	2.5	U 1.2	U 0.14	U 1.1	U 0.16	J 0.32	2.4
	12/4/2017	0.78	2.4	U 1.2	U 0.14	U 1.1	U 0.16	J 0.29	3.9
	3/27/2018	0.71	2.2	U 1.2	U 0.14	U 1.1	U 0.16	J 0.25	3.9
	8/21/2018	J 0.41	1.1	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	1.5
	10/16/2018	0.6	1.5	U 0.98	U 0.17	J 0.47	U 0.17	J 0.29	2.7
	11/28/2018	0.67	1.7	U 0.98	U 0.17	U 0.16	U 0.17	J 0.32	3.8
	3/27/2019	1.2	1.9	U 0.98	U 0.17	U 0.16	U 0.17	J 0.27	4.6
	6/10/2019	J 0.18	J 0.16	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	0.47
	9/23/2019	J 0.42	0.84	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	1.8
	12/3/2019	J 0.45	1	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	2.2
MW-19	3/26/2014	J 0.24	U 0.23	U 2	U 0.25	U 0.5	0.77	U 0.13	U 0.1
	5/1/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	0.8	U 0.084	U 0.2
	8/20/2014	J 0.14	U 0.11	U 2	U 0.077	U 0.34	1.2	U 0.084	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	1.1	U 0.084	U 0.082
	6/18/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	0.87	U 0.14	U 0.081
	12/1/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	0.9	U 0.14	U 0.081
	6/15/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	0.72	U 0.14	U 0.081
	11/28/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	0.76	U 0.044	U 0.098
	6/15/2017	J 0.15	U 0.12	U 0.097	U 0.055	U 0.08	0.72	U 0.044	U 0.098
	11/29/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	0.88	U 0.18	U 0.096
	8/20/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	0.73	U 0.15	U 0.092
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	0.68	U 0.15	U 0.092
	6/12/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	0.82	U 0.15	U 0.092
	12/4/2019	J 0.11	U 0.15	U 0.98	U 0.17	U 0.48	0.68	U 0.15	U 0.092
MW-20	3/25/2014	U 0.24	J 0.32	U 2	U 0.25	U 0.5	10.6	J 0.34	U 0.1
	5/2/2014	J 0.69	J 0.15	U 2	U 0.077	U 0.34	9.4	J 0.33	U 0.2
	8/19/2014	J 0.14	0.95	U 2	U 0.077	U 0.34	14.5	0.76	U 0.082
	12/9/2014	U 0.07	1	U 2	U 0.087	U 0.34	13.8	0.91	U 0.082
	6/17/2015	U 0.21	0.8	U 0.56	U 0.22	U 0.64	9.6	0.55	U 0.081
	12/1/2015	U 0.21	1.2	U 0.56	U 0.22	U 0.64	11.7	0.7	U 0.081
	6/15/2016	U 0.21	0.91	U 0.56	U 0.22	U 0.64	9.9	0.66	U 0.081
	8/25/2016	U 0.04	0.7	U 0.097	U 0.055	U 0.08	11.5	0.55	U 0.084
	11/30/2016	U 0.04	J 0.43	U 0.097	U 0.055	U 0.08	7.3	J 0.39	U 0.098
	4/17/2017	U 0.04	J 0.44	U 0.097	U 0.055	U 0.08	6.5	J 0.4	U 0.098
	6/15/2017	U 0.04	J 0.43	U 0.097	U 0.055	U 0.08	8.5	0.47	U 0.098
	9/21/2017	U 0.13	J 0.29	U 1.2	U 0.14	U 1.1	6.7	J 0.39	U 0.096
	12/4/2017	U 0.13	J 0.32	U 1.2	U 0.14	U 1.1	5.7	J 0.22	U 0.096

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- Value greater than the HHS

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TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-20	3/27/2018	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	8.1	J 0.39	U 0.096
	8/22/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 0.33	8.3	J 0.34	U 0.092
	10/16/2018	U 0.1	J 0.16	U 0.98	U 0.17	J 0.24	7.4	0.41	U 0.092
	11/27/2018	U 0.1	J 0.25	U 0.98	U 0.17	U 0.16	6.7	J 0.32	U 0.092
	3/27/2019	U 0.1	J 0.18	U 0.98	U 0.17	U 0.16	6.5	J 0.22	U 0.092
	6/13/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	7.1	J 0.27	U 0.092
	9/23/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	3.8	U 0.15	U 0.092
	12/3/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	6.8	J 0.16	U 0.092
MW-21	3/28/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	5/1/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.2
	8/20/2014	J 0.18	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	12/1/2015	J 0.24	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/28/2017	J 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/4/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-22	3/27/2014	J 0.33	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	5/1/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.2
	8/20/2014	J 0.46	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/10/2014	J 0.32	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	12/1/2015	J 0.22	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/28/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/4/2019	J 0.13	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-23	3/27/2014	J 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	5/1/2014	J 0.2	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.2
	8/20/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/10/2014	J 0.33	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	12/1/2015	J 0.32	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/28/2017	J 0.24	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	11/27/2018	J 0.22	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/4/2019	J 0.2	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-24	3/25/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	J 0.3	U 0.13	U 0.1
	5/2/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	J 0.36	U 0.084	U 0.2
	8/21/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	0.57	U 0.084	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	1.7	U 0.084	U 0.082
	6/18/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1.1	U 0.14	U 0.081
	12/1/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1	U 0.14	U 0.081
	6/16/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	0.66	U 0.14	U 0.081

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Sampling Location	Sampling Date	LABORATORY PARAMETERS							
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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MW-24	8/25/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	0.56	U 0.051	U 0.084
	11/28/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	1.1	U 0.044	U 0.098
	6/15/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	1.2	U 0.044	U 0.098
	11/28/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	1.7	U 0.18	U 0.096
	8/22/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 0.95	2.8	U 0.15	U 0.092
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	3	U 0.15	U 0.092
	6/13/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	2	U 0.15	U 0.092
	12/3/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	0.8	U 0.15	U 0.092
MW-25	5/2/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.2
	8/21/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	11/28/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	12/3/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-26	3/27/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	5/1/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.2
	8/21/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/11/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	11/28/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	12/3/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
MW-27	1/16/2015	J 0.08	U 0.11	U 2	U 0.087	U 0.34	1.2	U 0.084	U 0.082
	6/18/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1.4	U 0.14	U 0.081
	6/15/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1.1	U 0.14	U 0.081
	11/28/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	0.96	U 0.044	U 0.098
	6/19/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	0.91	U 0.044	U 0.098
	11/29/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	1.1	U 0.18	U 0.096
	8/22/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 0.74	0.99	U 0.15	U 0.092
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	1.1	U 0.15	U 0.092
	6/13/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	1	U 0.15	U 0.092
	12/4/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	1.4	U 0.15	U 0.092
McILHATTAN SEEP	1/19/1994	U 2	1	U 5	U 1	U 1	4	3	U 1
	1/19/1994	U 2	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/27/1994	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/27/1994	U 1	U 1	U 5	U 1	U 1	5	1	U 1
	1/31/1995	U 1	U* 1	U 5	U* 1	U 1	4	1	U 1
	6/28/1995	U 1	U 1	U 1	U 1	U 1	3	2	U 1
	11/28/1995	U 1	U 1	U* 5	U* 1	U 1	5	1	U 1
	6/26/1996	U 1	U 1	U 5	U 1	U* 1	2	U* 1	U 1
	12/12/1996	U 1	U* 1	U 5	U* 1	U* 1	3	U* 1	U 1
	6/20/1997	U 1	U 1	U 1	U 1	U 2	U 1	U 1	U 2

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
McILHATTAN SEEP	12/17/1997	U 1	U 1	U 5	U 1	U 1	1	4	U 1
	6/29/1998	U 1	U(3) 1	8	U(3) 1	U(3) 1	3	1	U 1
	12/15/1998	U 1	(1) U 1	U(1)B 5	(1) U 1	(1) U 1	4	4	U 1
	6/23/1999	U 1	U 1	(1) U 5	U 1	U 1	2	1	U 1
	12/14/1999	U 1	U 1	(1) U 5	U 1	U 1	3	2	U 1
	6/7/2000	U 1	U 1	(1) U 5	U 1	U 1	3	1	U 1
	11/29/2000	U 1	U 1	U 5	U 1	U 1	3	1	U 1
	6/12/2001	U 1	U 1	U 5	U 1	U 1	3	1	U 1
	12/18/2001	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	3	1	U 1
	6/14/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	2	(1) U 1	U 1
	12/12/2002	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	4	1	(1) U 1
	6/10/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	3	(1) U 1	U 1
	12/3/2003	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	2	(1) U 1	JJF% 1
	6/8/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	2	(1) U 1	U 1
	12/6/2004	U 1	(1) U 1	(1) U 5	(1) U 1	U 1	3	(1) U 1	U 1
	6/17/2005	U 1	(1) U 1	U 5	(1) U 1	U 1	2	(1) U 1	U 1
	12/14/2005	(1) U 1	(1) U 1	(1) U 5	(1) U 1	U 1	2	(1) U 1	U 1
	6/12/2006	U 0.5	(1) U 0.5	(1) U 5	(1) U 1	U 1	1.4	(1) U 0.5	U 0.5
	12/7/2006	U 0.5	U(1) 0.5	U 5	U 1	U 1	1.8	0.5	U 0.5
	6/19/2007	U 0.5	U 0.5	U 5	U 1	U 1	0.6	U 0.5	JJF% 0.5
	12/10/2007	U 0.5	U 0.5	U 5	U 1	U(1) 1	1.3	U 0.5	U 0.5
	6/26/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	0.6	U 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	1.4	U 1	U 0.4
	6/2/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	1.1	U 0.5	U 0.2
	12/4/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	1.6	U 0.5	U 0.2
	6/16/2010	U 0.5	U 0.5	40.4	U 0.5	U 0.5	1.2	U 0.5	U 0.5
	12/6/2010	U 1	U 1	U 1	U 1	U 1	1.2	U 1	U 1
	6/14/2011	U 0.04	U 0.08	U 2	U 0.072	J 0.061	0.73	J 0.26	U 0.049
	12/6/2011	U 0.05	J 0.13	U 5	U 0.072	U 0.13	1.1	J 0.3	U 0.16
	6/5/2012	U 0.05	J 0.19	U 2	U 0.072	U 0.13	1.1	J 0.32	U 0.16
	12/5/2012	U 0.05	J 0.23	U 2	U 0.072	U 0.13	1.2	J 0.32	U 0.16
	6/12/2013	U 0.24	J 0.3	U 2	U 0.25	U 0.5	1.3	0.41	U 0.2
	12/18/2013	U 0.24	J 0.32	U 2	U 0.25	J 0.7	1.2	J 0.39	U 0.1
	3/28/2014	U 0.24	U 0.23	U 2	U 0.25	U 0.5	1.2	0.41	U 0.1
	8/21/2014	U 0.07	J 0.26	U 2	U 0.077	U 0.34	1.7	J 0.3	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	6/15/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	1.2	J 0.37	U 0.081
	12/1/2015	U 0.21	J 0.34	U 0.56	U 0.22	U 0.64	1.2	0.41	U 0.081
	6/16/2016	U 0.21	J 0.39	U 0.56	U 0.22	U 0.64	0.95	J 0.3	U 0.081
	11/28/2016	U 0.04	J 0.39	U 0.097	U 0.055	U 0.08	1	J 0.26	U 0.098

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HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
MCILHATTAN SEEP	6/16/2017	U 0.04	J 0.32	U 0.097	U 0.055	U 0.08	0.87	J 0.35	U 0.098
	11/29/2017	U 0.13	J 0.37	U 1.2	U 0.14	U 1.1	1	J 0.22	U 0.096
	8/22/2018	U 0.1	J 0.36	U 0.98	U 0.17	J 0.52	0.96	J 0.25	U 0.092
	11/27/2018	U 0.1	J 0.32	U 0.98	U 0.17	U 0.16	0.83	J 0.25	U 0.092
	6/12/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	0.59	U 0.15	U 0.092
	12/3/2019	U 0.1	J 0.19	U 0.98	U 0.17	U 0.48	0.75	U 0.15	U 0.092
SHOP WELL	6/13/2011	U 0.04	1	U 2	1.6	U 0.021	3.8	2.3	J 0.13
	12/7/2011	U 0.05	0.95	U 5	1.7	U 0.13	3.9	2.2	U 0.16
	6/4/2012	U 0.05	0.64	U 2	1.2	U 0.13	3.7	1.7	U 0.16
	12/4/2012	U 0.05	0.86	U 2	1.7	J 0.21	4.5	2.1	U 0.16
	6/10/2013	U 0.24	0.65	U 2	1.9	U 0.5	4.4	1.7	U 0.2
	12/16/2013	U 0.24	1.5	U 2	3.7	U 0.5	7.3	3	U 0.1
	8/19/2014	U 0.07	1	U 2	2.1	U 0.34	8.7	2.5	U 0.082
	12/8/2014	U 0.07	U 0.11	U 2	2.2	U 0.34	7.2	U 0.084	U 0.082
	12/1/2017	U 0.13	1.1	U 1.2	2.3	U 1.1	5.6	2	U 0.096
	12/3/2019	U 0.1	1.1	U 0.98	1.8	U 0.48	5.8	1.8	U 0.092
VET CLINIC WELL	1/19/1994	U 2	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/28/1994	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	1/31/1995	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/28/1995	U 1	U 1	U 1	U 1	U 1	4	2	U 1
	11/28/1995	U 1	U 1	U* 5	U 1	U 1	U 1	U 1	U 1
	6/26/1996	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/12/1996	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/20/1997	U 1	U 1	U 1	U 1	U 2	U 1	U 1	U 2
	12/17/1997	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/30/1998	U 1	U 1	U(3) 5	U 1	U 1	U 1	U 1	U 1
	12/15/1998	U 1	U 1	U(1)B 5	U 1	(1) U 1	U 1	U 1	U 1
	6/23/1999	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/14/1999	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/7/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	11/28/2000	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2001	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/18/2001	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/14/2002	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1
	12/12/2002	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/10/2003	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/4/2003	U 1	U 1	U 5	U 1	U 1	U 1	U 1	JJF% 1
	6/8/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	12/6/2004	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/17/2005	U 1	U 1	U 5	U 1	U 1	U 1	U 1	U 1

Notes: µg/L - micrograms per liter
HHS - Human Health Standard (EPA Maximum Contaminant Level or HHS in Circular DEQ-7, Montana Numeric WQ Stds, June 2019)
NA - Not Applicable < Less than

J - Estimated Concentration
(1) - No HHS or MCL established
-- - Not collected/analyzed
U - Below Method Detection Limit
* (1, 2, or 3) B JF% - Additional QA/QC notes described in lab report

- Value greater than the HHS

Vinyl Chloride concentration highlighted only if greater than 2 micrograms per liter (EPA Maximum Contaminant Level). Montana HHS is greater than 0.2 micrograms per liter (not highlighted).

TABLE 4
Summary of Selected Volatile Organic Compounds
Bozeman Landfill
Bozeman, Montana

Sampling Location	Sampling Date	LABORATORY PARAMETERS							
		Benzene (µg/L)	Cis 1,2-dichloro-ethene (µg/L)	Methylene Chloride (µg/L)	1,1-Dichloro-ethane (µg/L)	Chloro-methane (µg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Vinyl chloride (µg/L)
HHS		**5**	**70**	**5**	(1)	(1)	**5**	**5**	**2**
VET CLINIC WELL	12/14/2005	U 1	U 1	(1) U 5	U 1	U 1	U 1	U 1	U 1
	6/12/2006	U 0.5	U 0.5	(1) U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/7/2006	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	6/21/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	JJF% 0.5
	12/12/2007	U 0.5	U 0.5	U 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	6/25/2008	U 0.5	U 0.5	U(1) 5	U 1	U 1	U 0.5	U 0.5	U 0.5
	12/9/2008	U 1	U 1	U 4	U 1	U 1	U 1	U 1	U 0.4
	6/2/2009	U 0.5	U 0.5	U 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	12/10/2009	U 0.5	U 0.5	UB 2	U 0.5	U 2	U 0.5	U 0.5	U 0.2
	6/16/2010	U 0.5	U 0.5	38.1	U 0.5	U 0.5	U 0.5	U 0.5	U 0.5
	12/8/2010	U 1	U 1	U 1	U 1	U 1	U 1	U 1	U 1
	6/15/2011	U 0.04	U 0.08	U 2	U 0.072	U 0.021	U 0.041	U 0.05	U 0.049
	12/7/2011	U 0.05	U 0.08	U 5	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/5/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	12/6/2012	U 0.05	U 0.08	U 2	U 0.072	U 0.13	U 0.16	U 0.11	U 0.16
	6/12/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.12	U 0.2
	12/18/2013	U 0.24	U 0.23	U 2	U 0.25	U 0.5	U 0.25	U 0.13	U 0.1
	8/21/2014	U 0.07	U 0.11	U 2	U 0.077	U 0.34	U 0.099	U 0.084	U 0.082
	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082
	6/15/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	12/1/2015	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	6/16/2016	U 0.21	U 0.25	U 0.56	U 0.22	U 0.64	U 0.19	U 0.14	U 0.081
	11/28/2016	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	6/16/2017	U 0.04	U 0.12	U 0.097	U 0.055	U 0.08	U 0.13	U 0.044	U 0.098
	11/29/2017	U 0.13	U 0.2	U 1.2	U 0.14	U 1.1	U 0.16	U 0.18	U 0.096
	8/22/2018	U 0.1	U 0.15	U 0.98	U 0.17	J 1.2	U 0.17	U 0.15	U 0.092
	11/27/2018	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	6/12/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.16	U 0.17	U 0.15	U 0.092
	12/3/2019	U 0.1	U 0.15	U 0.98	U 0.17	U 0.48	U 0.17	U 0.15	U 0.092
SNOWFILL WELL	12/10/2014	U 0.07	U 0.11	U 2	U 0.087	U 0.34	U 0.12	U 0.084	U 0.082

Notes: µg/L - micrograms per liter
HHS - Human Health Standard (EPA Maximum Contaminant Level or HHS in Circular DEQ-7, Montana Numeric WQ Stds, June 2019)
NA - Not Applicable < Less than

J - Estimated Concentration
(1) - No HHS or MCL established
-- - Not collected/analyzed
U - Below Method Detection Limit
* (1, 2, or 3) B JF% - Additional QA/QC notes described in lab report

- Value greater than the HHS

Vinyl Chloride concentration highlighted only if greater than 2 micrograms per liter (EPA Maximum Contaminant Level). Montana HHS is greater than 0.2 micrograms per liter (not highlighted).

File: bozLandfill2-1.mdb [Reports - MonRptTable4]

Tetra Tech

TABLE 5
Comparison of Medians of Selected Groundwater Quality Data
December 2019 Monitoring Event
Bozeman Landfill, Bozeman, Montana

Parameter	Units	Compliance Well MW-6 Median	Compliance Well MW-8A Median	Background Well MW-5 Median	Background Well MW-15 Median	N [1]	P-value[2] MW- 5 / MW-15	Statistically Above Background[3]
1,1, Dichloroethane	ug/L	0.98	-	0.13	0.13	17/17	.000/.000	YES
cis1,2, Dichlorothene	ug/L	2.00	-	0.12	0.12	17/17	.000/.000	YES
Tetrachlorethene (PCE)	ug/L	0.69	-	0.13	0.13	17/17	.000/.000	YES
Tetrachlorethene (PCE)	ug/L	-	0.70	0.13	0.13	17/17	.000/.000	YES
Trichloroethene (TCE)	ug/L	0.50	-	0.08	0.08	17/17	.000/.000	YES
Trichloroethene (TCE)	ug/L	-	0.33	0.08	0.08	17/17	.000/.000	YES
Vinyl Chloride	ug/L	0.82	-	0.08	0.08	17/17	.000/.000	YES[4]
Vinyl Chloride	ug/L	-	0.08	0.08	0.08	17/17	.973/.973	NO
Nitrate+Nitrite as N	mg/L	-	9.20	4.30	5.00	17/17	.000/.000	YES

Notes: µg/L : micrograms per liter
mg/L : milligrams per liter

(1) Sample Size

(2) Mann-Whitney U test at the 99 percent confidence level.

(3) Results are significant if the p-value is less than or equal to 0.01 (and Z value is positive in worksheets)

(4) Groundwater protection standards (GPS) for vinyl chloride is 2 µg/L as established the by the U.S. EPA. Montana GPS for vinyl chloride is 0.2 µg/L (Health Advisory). The MW-6 data set for vinyl chloride exceeded the (U.S. EPA) GPS only once (2.1 µg/L in November 2018). Statistical analysis shows the vinyl chloride concentrations in MW-6 are not statistically greater than the (U.S. EPA) GPS.

TABLE 6
Summary of Statistical Analysis of Selected Groundwater Quality Data
December 2019 Monitoring Event
Bozeman Landfill, Bozeman, Montana

Parameter	Well	GPS[1]	Test[2]	N[3]	Test Result (P-value)	Statistically Greater than GPS[4]
Nitrate+Nitrite as N	MW-8A	10	1SW	15	0.7120	No
Trichloroethene (TCE)	MW-12	5	1SW	15	0.0007	No[5]
Tetrachlorethene (PCE)	MW-7A	5	1SW	15	0.0446	No
Vinyl Chloride	MW-6	2	1SW	15	0.0008	No[5]
	MW-6	0.2	1SW	15	0.0007	Yes
	MW-7A	2	1SW	14	0.0010	No[5]
	MW-7A	0.2	1SW	14	0.0219	No
	MW-12	2	1SW	15	0.0007	Yes
	MW-13	2	1SW	15	0.0007	Yes
Methylene Chloride (DCM)	MW-17	5	1SW	12	0.8139	No

Notes:

(1) Groundwater protection standards (GPS) are stated in micrograms per liter (µg/L) except Nitrate+Nitrite which is in milligrams per liter. The GPS for vinyl chloride is 2 µg/L as established by the U.S. EPA. Montana GPS for vinyl chloride is 0.2 µg/L (Health Advisory).

(2) 1SW indicates a 1-Sample Wilcoxon Test at the 99 percent confidence level; 1ST indicates a 1- Sample t-Test at the 99 percent confidence level

(3) Sample size after data censoring (further reduction due to the values may occur in 1-Sample Wilcoxon test)

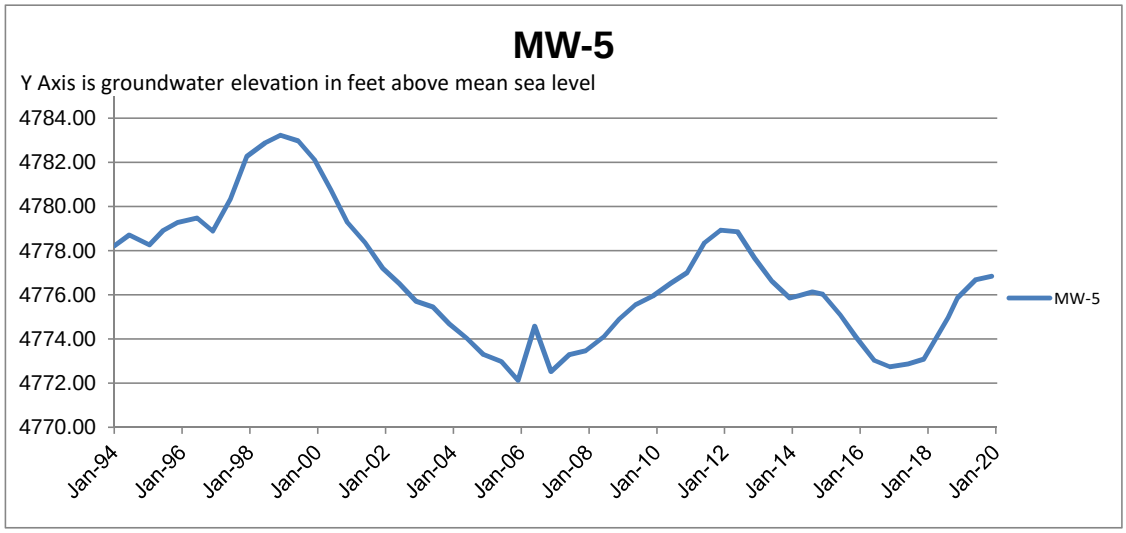
(4) Results are significant if the p-value is less than or equal to 0.01

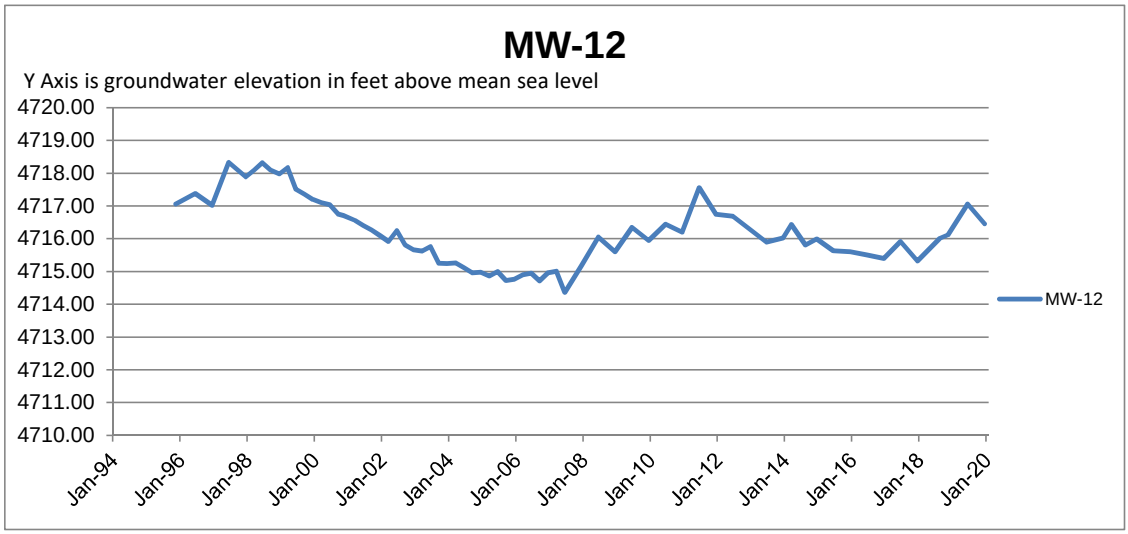
(5) The Wilcoxon test indicated that there is a significant difference between well compliance well values and the GPS value. The difference is due to the fact that the compliance well values are lower than the GPS value.

APPENDIX A

GROUNDWATER DATA OVER TIME (Selected Wells)

CHART A-1
Summary of Changes in Groundwater Levels Through Time
Bozeman Landfill, Bozeman, Montana





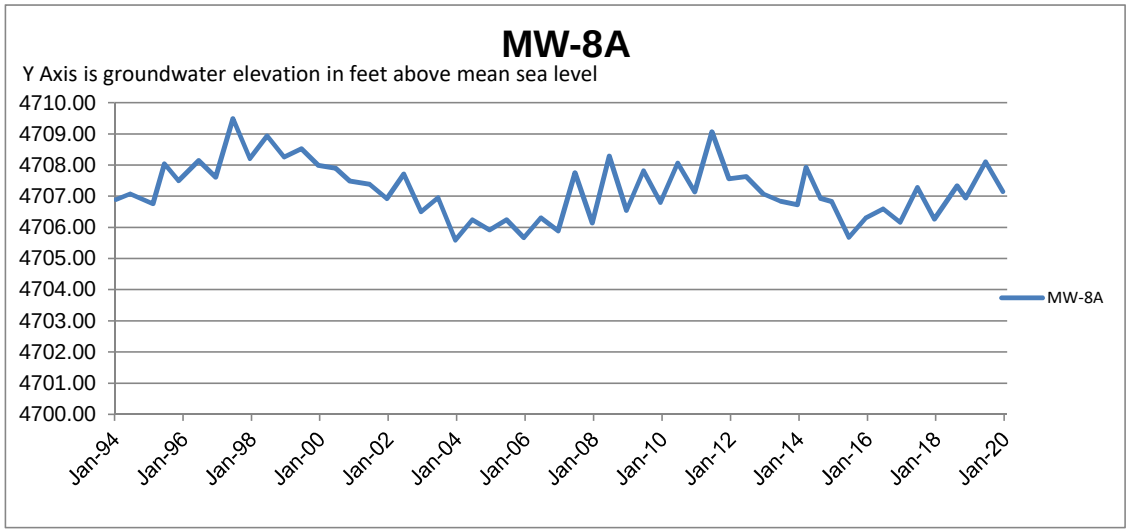


Chart A-2: MW-12

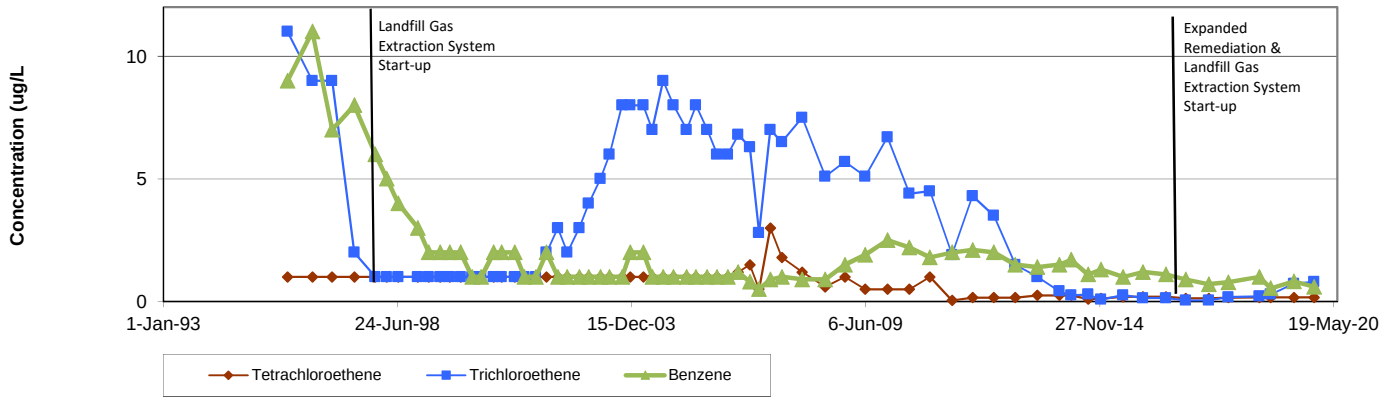


Chart A-2: MW-12

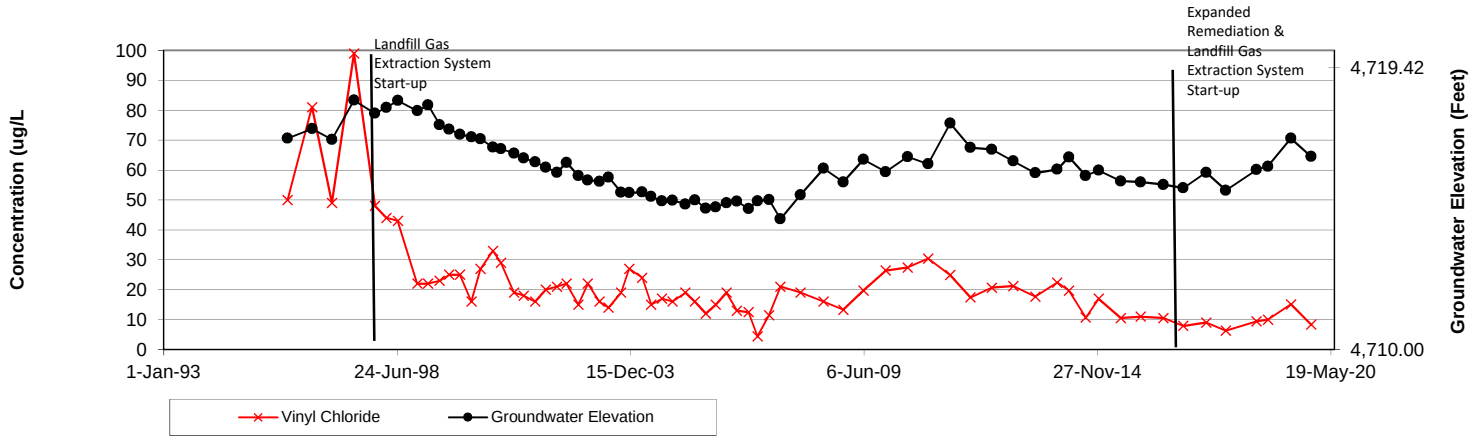


Chart A-3: MW-13

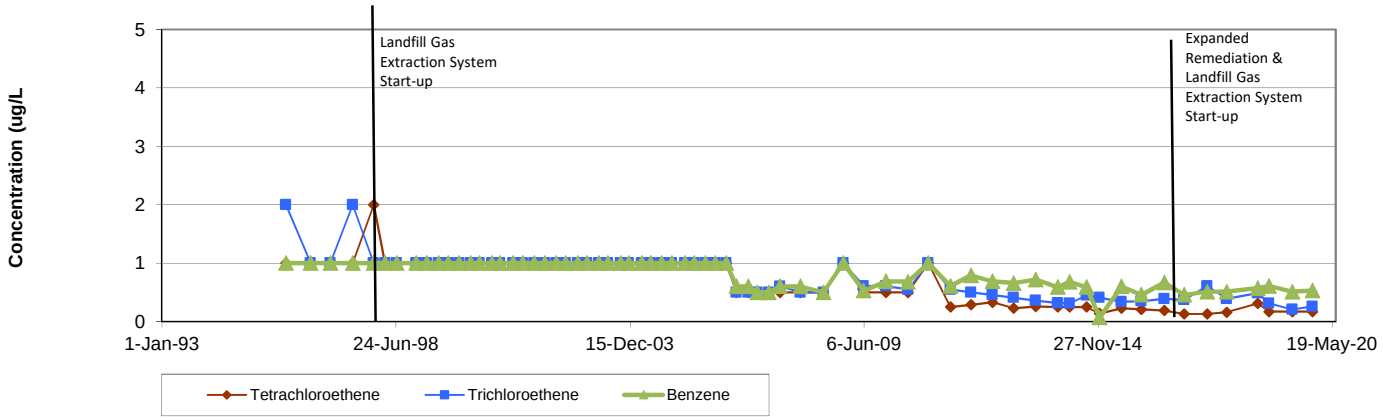


Chart A-3: MW-13

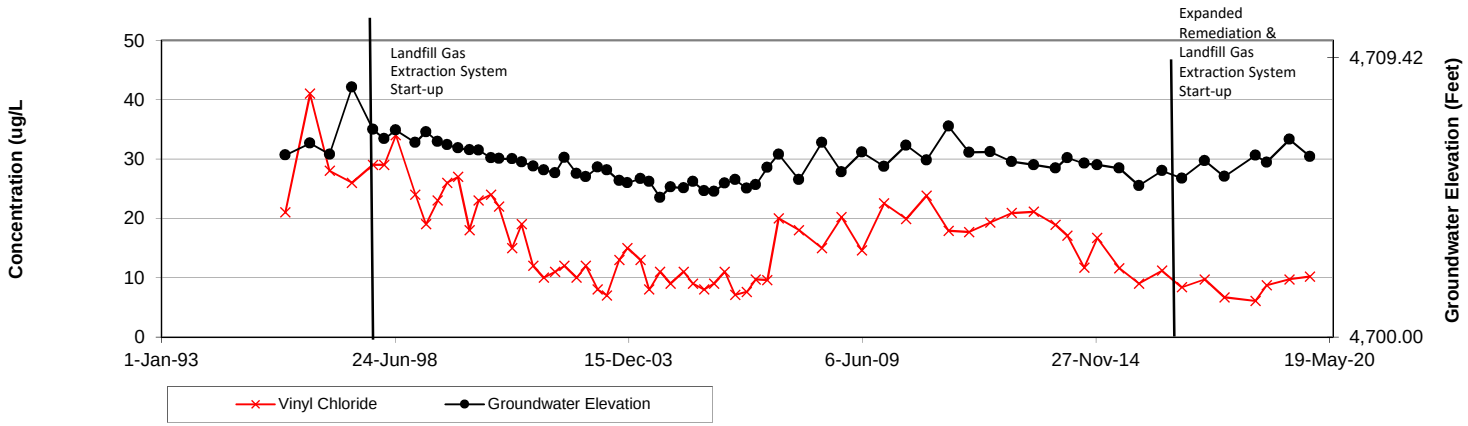


Chart A-4: MW-6

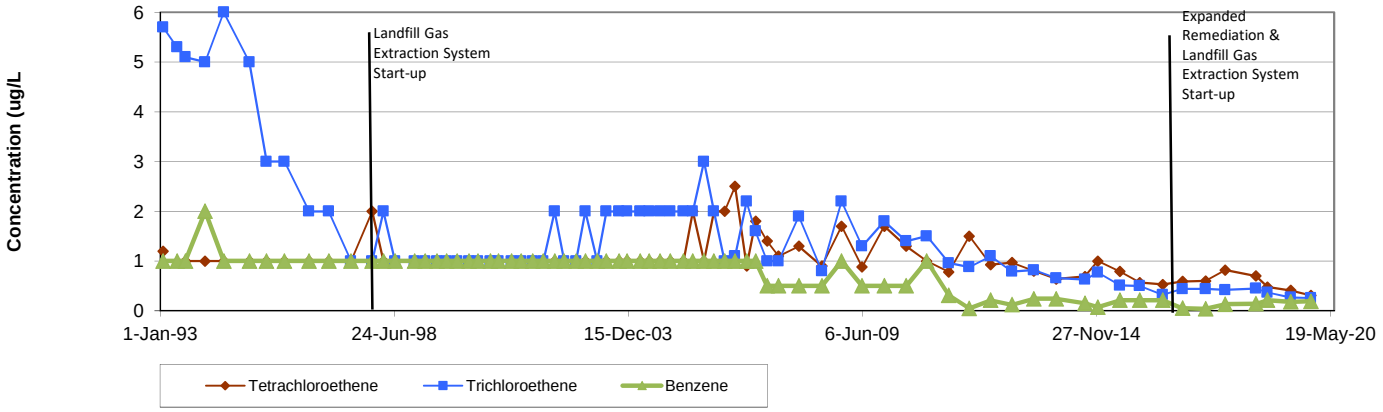


Chart A-4: MW-6

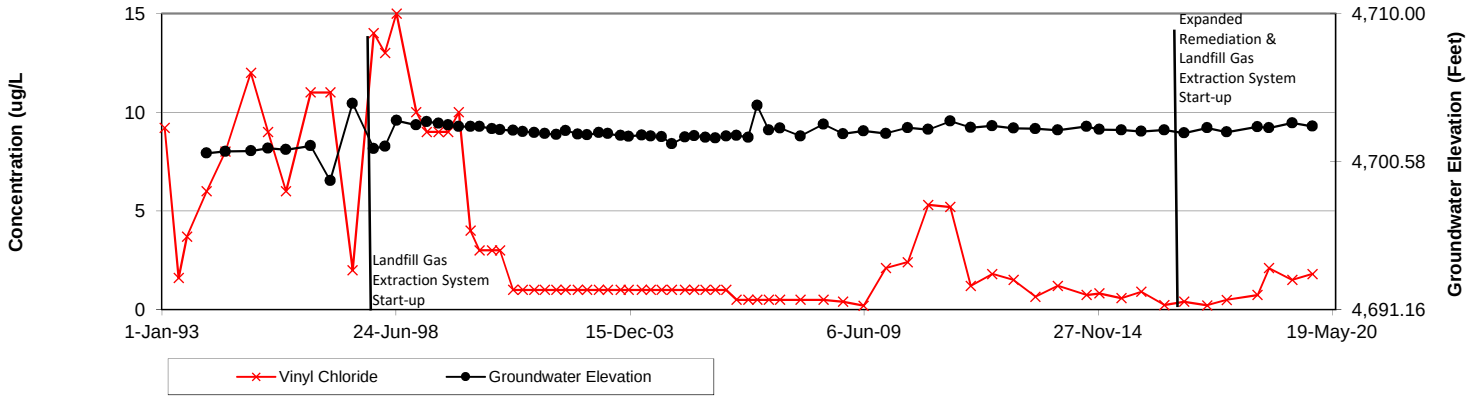


Chart A-5: MW-8A

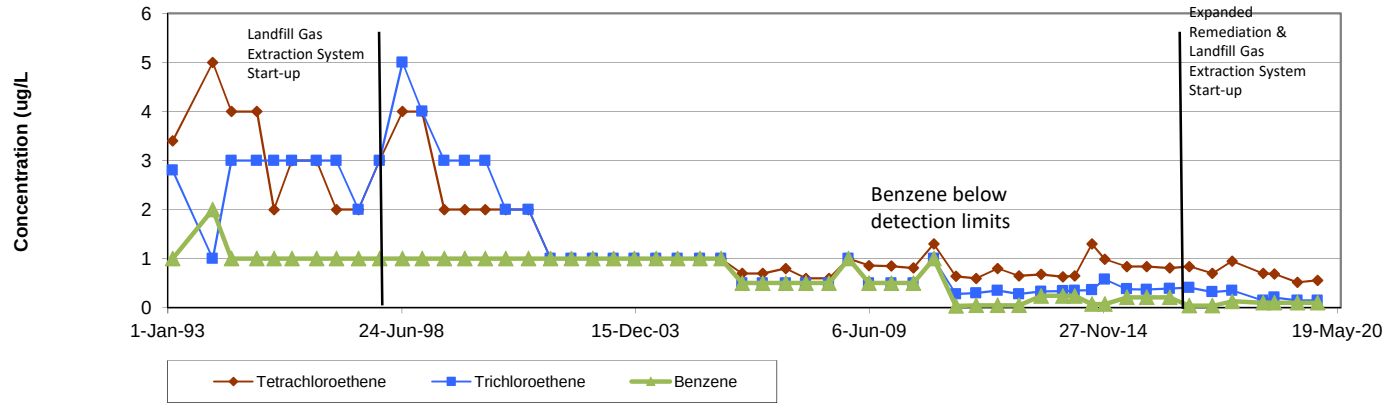
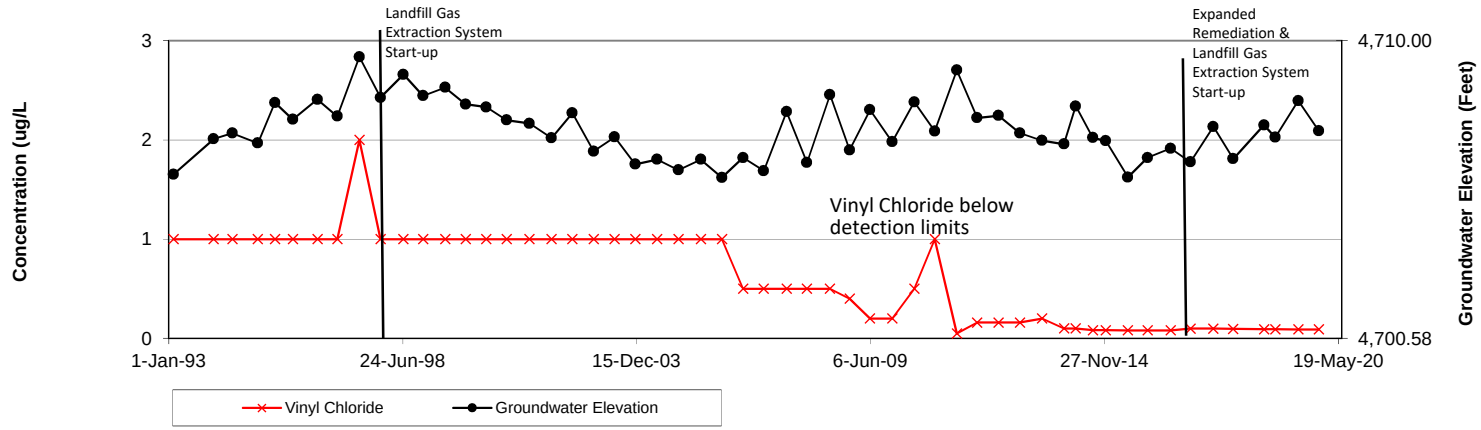


Chart A-5: MW-8A



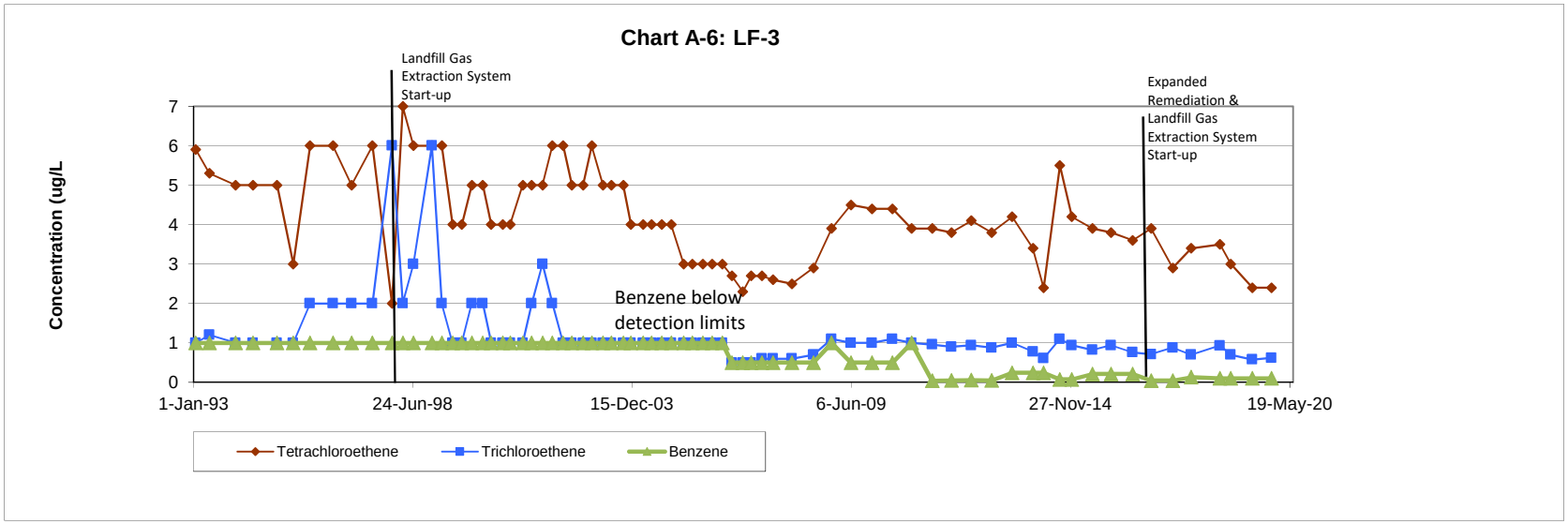


Chart A-6: LF-3
Concentration (ug/L)
Landfill Gas Extraction System Start-up
Expanded Remediation & Landfill Gas Extraction System Start-up
Benzene below detection limits
0
1
2
3
4
5
6
7
1-Jan-93
24-Jun-98
15-Dec-03
6-Jun-09
27-Nov-14
19-May-20
Tetrachloroethene
Trichloroethene
Benzene

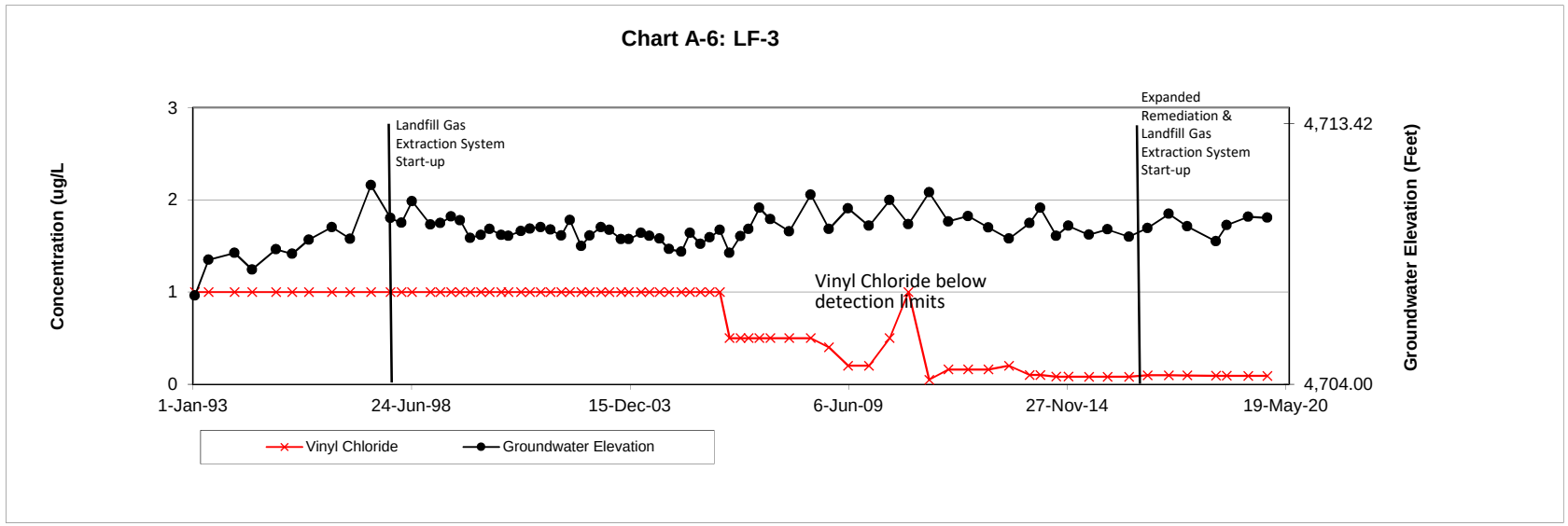


Chart A-6: LF-3
Concentration (ug/L)
Groundwater Elevation (Feet)
Landfill Gas Extraction System Start-up
Expanded Remediation & Landfill Gas Extraction System Start-up
Vinyl Chloride below detection limits
4,713.42
4,704.00
0
1
2
3
1-Jan-93
24-Jun-98
15-Dec-03
6-Jun-09
27-Nov-14
19-May-20
Vinyl Chloride
Groundwater Elevation

APPENDIX B

SAMPLING LOGS AND FIELD NOTES

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1520 Station No. LF-2

Personnel: MFPearson, SAMatolyak Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [✓] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 19.6 - Depth to Water 14.00 = 5.6 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

5.6 ft. water in well x _____ gal./ft * = one casing volume 3.7 gals. x 3 = purge volume 11.1 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	3.7	9.49	7.11	568	94.3	9.37
	7.4	9.63	7.19	568	92.7	8.22
	11.1	8.72	7.20	546	94.7	8.42
		9.94	7.21	575	95.4	7.87

Down Hole

DO measured: In-well [✓] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [✓] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1540 Station No. LF-3

Personnel: MFP SAM Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [✓] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 37.5 - Depth to Water 13.58 = 23.92 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [✓] Disposable bailer [ ] Spigot [ ] Other _____

23.9 ft. water in well x _____ gal./ft * = one casing volume 15.6 gals. x 3 = purge volume 46.8 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
1520	Start Purge at 3 gpm						
~~1525~~ 1522							
1525		9.76	7.12	728	109.5	8.24	Flow thru Cell
1530		9.81	7.13	733	112.9	8.17	
1535		9.80	7.13	732	116.6	8.16	

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [✓] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line	
pH	451-556	12/3/19
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: DUP-3 @ 1600

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1220 Station No. MW-4

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Cloudy

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [✓] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 38.0 - Depth to Water 20.51 = 17.49 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [✓] Disposable bailer [ ] Spigot [ ] Other _____

17.49 ft. water in well x _____ gal./ft * = one casing volume 11.4 gals. x 3 = purge volume 34.2 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
1150	Start @ 3 gpm						
1154		9.01	6.87	814	100	2.87	Flow thru cell
1158		9.07	6.86	825	100.7	2.93	
1202		9.09	6.86	844	101.3	3.06	

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [✓] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [ ] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	"
ORP	YSI-556	"
DO	YSI-556	"

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1000 Station No. MW-5

Personnel: MFPearson, SAMatolyak Weather: Calm, ~32°, Cloudy, 6-8" Snowpack

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 160 - Depth to Water 112.14 = 47.86 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [✓] Disposable bailer [ ] Spigot [ ] Other _____

47.86 ft. water in well x _____ gal./ft * = one casing volume 7.8 gals. x 3 = purge volume 23.4 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
930	Start Purge @ 1 gpm						
938		8.95	7.11	452	122.3	8.11	Flow through Cell
946		9.48	7.13	448	129.8	8.14	
954		9.66	7.13	448	131.7	8.17	

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [✓] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [✓] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	12/2/19
pH	YSI-556	
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 930 Station No. MW-6

Personnel: MFPearson, SAMatolyak Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 56 - Depth to Water 31.32 = 23.68 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [✓] Disposable bailer [ ] Spigot [ ] Other _____

23.68 ft. water in well x _____ gal./ft * = one casing volume 3.9 gals. x 3 = purge volume 11.7 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
910	Start pumping @ 0.9 gpm						
915	3.9	10.47	6.49	796	159.7	4.25	Flow through cell
919	7.8	10.46	6.51	848	154.0	2.80	
923	11.7	10.44	6.51	911	144.3	2.34	

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [✓] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [✓] Other: _____

Sample Type: Natural [✓] Duplicate [✓] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	"
ORP	YSI-556	"
DO	YSI-556	"

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: MW-6B = 15.68' WL

DUP 2 @ 950

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @1300 Station No. MW-7A

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Cloudy

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 65.9 - Depth to Water 56.59 = 9.31 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

9.31 ft. water in well x _____ gal./ft * = one casing volume 1.5 gals. x 3 = purge volume 4.5 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	1.5	10.04	7.14	462	95	6.64	
	3.0	10.43	6.88	537	110.6	4.78	
	4.5	10.43	6.84	597	111.3	4.54	
		10.54	6.73	588	115.2	4.42	Down Hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: MW-7B = 56.69' WL

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @1630 Station No. MW-8A

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 56.0 - Depth to Water 47.43 = 8.57 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

8.57 ft. water in well x _____ gal./ft * = one casing volume 1.4 gals. x 3 = purge volume 4.2 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	1.4	8.27	6.85	992	8.6	8.85	
	2.8	8.48	7.03	989	43.8	8.61	
	4.2	8.63	7.03	981	55.8	8.14	
		9.10	7.06	989	68.1	7.32	Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: MW-8B = 47.69' WL
MW-8C = 42.96' WL

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @1130 Station No. MW-9A

Personnel: MFPearson, SAMatolyak Weather: Calm, Cloudy

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 39.0 - Depth to Water 28.13 = 10.87 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

10.87 ft. water in well x _____ gal./ft * = one casing volume 1.8 gals. x 3 = purge volume 5.4 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.8	8.61	6.80	979	125	4.65
	3.6	9.38	6.80	997	122	4.25
	5.4	9.40	6.85	1005	111.4	4.00
		9.56	6.79	1091	111.2	2.20

Down hole

DO measured: In-well [✓] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: MW-9B = 28.38' WL

1130

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1340 Station No. MW-10

Personnel: MFP Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 14.5 - Depth to Water 2.06 = 12.44 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

12.44 ft. water in well x _____ gal./ft * = one casing volume 2 gals. x 3 = purge volume 6 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	2	6.18	6.99	1079	-15.7	6.32	
	4	6.30	7.09	1083	-47.7	3.04	
	6	6.14	7.12	1080	-54.9	3.45	
		6.31	7.10	1083	-63.9	1.06	Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line	
pH	YSI-556	12/3/19
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1440 Station No. MW-11

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 70.0 - Depth to Water 51.25 = 18.75 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

18.75 ft. water in well x _____ gal./ft * = one casing volume 3 gals. x 3 = purge volume 9 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
		9.53 →	7.03	722	70.6	4.12
	3	~~8~~				
	6 →	9.61	7.14	720	75.6	4.66
	9	NM	NM	NM	NM	NM
		10.11	7.29	733	75.2	3.22 Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1530 Station No. MW-12

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 65.8 - Depth to Water 55.70 = 10.1 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

10.1 ft. water in well x _____ gal./ft * = one casing volume 1.65 gals. x 3 = purge volume 5.0 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.65	10.94	6.87	983	-26.2	2.94
	3.3	11.12	6.78	994	-24.0	2.55
	5.0	11.05	6.72	995	-6.5	1.90
		11.91	6.64	995	-7.5	~~0.49~~ Downhole
						0.46

DO measured: In-well [✓] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	YSI-556
SC	YSI-556	12/2/19
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1330 Station No. MW-13

Personnel: MFP SAM Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 61.3 - Depth to Water 43.42 = 17.88 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

17.88 ft. water in well x _____ gal./ft * = one casing volume 2.9 gals. x 3 = purge volume 8.7 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	2.9	10.83	6.62	1070	113	3.41
	5.8	11.18	6.64	1078	94.4	2.70
	8.7	11.50	6.69	1075	89.1	2.59
		11.85	6.69	1086	19.6	0.39 Down hole

DO measured: In-well [✓] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [✓] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	WaterLine	
pH	YSI-556	12/2/19
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: DUP 1 collected @ 1340 time

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @ 1030 Station No. MW-15

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Cloudy

Well Locked? Yes [ ] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point) 72.5 - Depth to Water 44.36 = 28.14 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

28.14 ft. water in well x _____ gal /ft * = one casing volume 4.6 gals. x 3 = purge volume 13.8 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	4.6	7.78	7.34	410	114	8.54	
	9.2	7.47	7.14	409	121.2	8.76	
	13.8	7.21	7.09	417	123.1	8.04	
		8.17	7.04	414	126.0	7.74	Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [ ] or total [✓]	250 ml poly	HNO_3
Yes [✓] No [ ]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	12/2/19
pH	YSI-556	
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/2/19 @1700 Station No. MW-17

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other_____ Measuring Point: Top of PVC, north side [✓] Other_____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 85.0 - Depth to Water 75.89 = 9.11 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [ ] Spigot [ ] Other_____

9.11 ft. water in well x _____ gal./ft * = one casing volume 1.5 gals. x 3 = purge volume 4.5 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.5	8.14	6.88	1416	81.9	7.49
	3.0	8.43	6.84	1323	83.4	7.48
		- Too deep for downhole measurement				

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other_____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other:_____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/2/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_20:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: ~~DUP2 @ 1650~~ Half bailers after 2 gal. Decide to sample. Last parameters at 2.3 gal

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1020 Station No. MW-18

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 59.1 - Depth to Water 46.91 = 12.19 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

12.19 ft. water in well x _____ gal./ft * = one casing volume 2 gals. x 3 = purge volume 6 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	2	14.59	6.41	1974	-40	2.38	
	4	15.81	6.68	2009	-67.2	1.75	
	6	15.91	6.78	2021	-73.5	1.56	
		15.75	6.73	2007	-77.6	0.35	Down hole

DO measured: In-well [ ] In water bailed [ ] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/4/19 @1150 Station No. MW-19

Personnel: MFP SAM Weather: Clear, Calm

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: ✓

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other ✓ Measuring Point: Top of PVC, north side [✓] Other

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 30.5 - Depth to Water 21.94 = 8.56 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other

8.56 ft. water in well x _____ gal./ft * = one casing volume 1.4 gals. x 3 = purge volume 4.2 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.4	9.11	6.59	751	112.9	9.95
	2.8	9.32	6.69	755	112.8	9.28
	4.2	9.42	6.76	751	109.2	9.02
		9.52	6.76	751	111.6	8.98 Downhole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other:

Sample Type: Natural [✓] Duplicate [ ] Other:

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	WaterLine	12/4/19
pH	YSI-556	✓
SC	✓	✓
ORP	✓	✓
DO	✓	✓

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments:

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @1110 Station No. MW-20

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 65.0 - Depth to Water 53.41 = 11.59 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

11.59 ft. water in well x _____ gal./ft * = one casing volume 1.9 gals. x 3 = purge volume 5.7 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	1.9	9.45	7.33	1004	-49.8	8.42	
	3.8	8.96	7.27	980	24.3	7.93	
	4.2	9.22	7.15	955	43.8	6.63	Dowmth

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: After 1 gal, partial bailers
Decide to sample after 3 gal due to
getting 1/2 bailers of water

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/4/19 @ 950 Station No. MW-21

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Clear, Calm

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 18.0 - Depth to Water 10.08 = 7.92 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

7.92 ft. water in well x _____ gal./ft * = one casing volume 1.3 gals. x 3 = purge volume 3.9 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.3	8.43	6.91	452	98.3	5.04
	2.6	9.05	6.92	446	98.2	5.78
	3.9	9.37	6.96	442	96.1	4.17
		9.69	7.01	439	[illegible]	[illegible] Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____ 91.3 2.16

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	12/4/19
pH	YSI-556	
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/4/19 @ 1030 Station No. MW-22

Personnel: MFP, SAM Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 17.0 - Depth to Water 4.72 = 12.28 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

12.28 ft. water in well x _____ gal./ft * = one casing volume 2 gals. x 3 = purge volume 6 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	2	8.17	6.11	695	96.6	6.11
	4	8.84	6.15	669	97.2	5.03
	6	8.85	6.15	664	96.5	5.06
		9.12	6.11	663	98.5	3.77

Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	WaterLine 451-556	12/4/19
pH		
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/4/19 @ 1110 Station No. MW-23

Personnel: MFP SAM Weather: Calm Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 16.0 - Depth to Water 6.10 = 9.9 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

9.9 ft. water in well x _____ gal./ft * = one casing volume 1.6 gals. x 3 = purge volume 4.8 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1.6	7.76	6.53	469	92.5	5.4
	3.2	7.82	6.56	467	93.0	5.1
	4.8	7.93	6.57	466	93.6	4.84
		8.21	6.59	466	107.7	3.56

Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line 451-SS6	12/4/19
pH		
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1200 Station No. MW-24

Personnel: MFPearson, SAMatolyak Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 80.5 - Depth to Water 74.85 = 5.65 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

5.65 ft. water in well x _____ gal./ft * = one casing volume 1 gals. x 3 = purge volume 3 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	1	7.8	7.32	640	57.6	10.5
	2	8.67	7.35	622	66.2	9.51

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: Partial bailers after 1 gal. Decide to sample after 2 gal.

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 0 1230 Station No. MW-25

Personnel: MFP, SAM Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 63.0 - Depth to Water 50.63 = 12.37 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

12.37 ft. water in well x _____ gal./ft * = one casing volume 2 gals. x 3 = purge volume 6 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	2	8.22	7.03	615	80.7	8.98
Bailed dry	3.5	8.02	7.09	573	86.5	8.37
		8.43	7.21	541	82.9	8.71 downhole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line	
pH	451-556	12/3/19
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: Bailed almost dry at 3.5 gallons

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1300 Station No. MW-26

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other _____ Measuring Point: Top of PVC, north side [✓] Other _____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 33.0 - Depth to Water 14.86 = 18.14 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other _____

18.14 ft. water in well x _____ gal./ft * = one casing volume 3 gals. x 3 = purge volume 9 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
	3	9.16	7.12	737	82.9	5.88
	6	9.06	7.17	734	78.0	4.35
	9	8.53	7.20	743	76.2	5.09
		8.77	7.16	742	74.2	2.45 Downhole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other _____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: _____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/4/19 @ 1230 Station No. MW-27

Personnel: MFPearson, SAMatolyak Tetra Tech Inc. Weather: Calm, Clear

Well Locked? Yes [✓] No [ ] Note Any Problems With Condition of Well: ✓

Casing Dia. & Type: 2-inch PVC [✓] 4-inch PVC [ ] Other ____ Measuring Point: Top of PVC, north side [✓] Other ____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): 27.0 - Depth to Water 19.69* = 7.31 ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [✓] Spigot [ ] Other ____

7.31 ft. water in well x ____ gal./ft * = one casing volume 1.2 gals. x 3 = purge volume 3.6 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): ____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
	1.2	8.20	6.89	702	97.6	12	
	2.4	8.34	6.91	702	98.6	10.7	
	3.6	8.31	6.92	704	98.0	10.1	
		8.77	7.02	699	96.3	9.93	Down hole

DO measured: In-well [ ] In water bailed [✓] In water pumped [ ] Other ____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other: ____

Sample Type: Natural [✓] Duplicate [ ] Other: ____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [✓] No [ ]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/4/19
SC	YSI-556	✓
ORP	YSI-556	
DO	YSI-556	

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: ____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1000 Station No. Shop Well

Personnel: MFPearson, SAMatolyak Weather: Calm, Clear

Well Locked? Yes [ ] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [ ] Other_____ Measuring Point: Top of PVC, north side [ ] Other_____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): _____ - Depth to Water NM = _____ ft. water in well

WELL EVACUATION

Evacuation Method: Dedicated Submersible Pump [✓] Disposable bailer [ ] Spigot [ ] Other_____

_____ ft. water in well x _____ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
856	Start Purge. 2.2 gal/10 sec			≥13.2 gpm			
940	581	10.04	7.10	648	119.3	3.43	Flow Through Cell

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other_____

WELL SAMPLING

Sampling Method: Submersible Pump [✓] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [ ] Other:_____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [ ] No [✓]	Metals: dissolved [ ] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Minneapolis, MN Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	Water Line®	
pH	YSI-556	12/3/19
SC	YSI-556	"
ORP	YSI-556	"
DO	YSI-556	"

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 @ 1400 Station No. McIlhattan Seep

Personnel: MFP SAM Weather: Calm, Clear

Well Locked? Yes [ ] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [ ] Other_____ Measuring Point: Top of PVC, north side [ ] Other_____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): _____ - Depth to Water Flowing Spring ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [ ] Spigot [ ] Other_____

_____ ft. water in well x _____ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): Immersed in Springflow

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO
1400		9.69	7.26	898	-21.4	6.44 Flow Through Cell

DO measured: In-well [ ] In water bailed [ ] In water pumped [ ] Other_____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [✓] Spigot [ ] Grab [ ] Other:_____

Sample Type: Natural [✓] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [✓] or total [ ]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	—	
pH	YSI-556	12/3/19
SC		
ORP		
DO		

Decontamination

Liquinox:	Yes [✓] No [ ]	Scrub:	Yes [ ] No [ ]
Potable H_2O:	Yes [✓] No [ ]	Steam:	Yes [ ] No [ ]
DI water:	Yes [✓] No [ ]	Nitric Acid:	Yes [ ] No [ ]

Comments: _____

GROUNDWATER SAMPLING LOG

Project: Bozeman Landfill Date: 12/3/19 0/1440 Station No. Vet Well

Personnel: MFP, SAM Weather: Calm, Clear

Well Locked? Yes [ ] No [ ] Note Any Problems With Condition of Well: _____

Casing Dia. & Type: 2-inch PVC [ ] 4-inch PVC [ ] Other_____ Measuring Point: Top of PVC, north side [ ] Other_____

Aquifer: Tertiary sediments (sand, gravel, and clayey silt)

Well Depth (ft. below measuring point): _____ - Depth to Water NM = _____ ft. water in well

WELL EVACUATION

Evacuation Method: Submersible Pump [ ] Disposable bailer [ ] Spigot [ ] Other Hose

_____ ft. water in well x _____ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

Pumping rate (gpm): _____

EVACUATION DATA

Time	Cumulative Gallons	Temp	pH	SC	ORP	DO	
1415	Start purge @ 2 gpm						
1435	40	9.95	7.41	490	56.9	7.57	Flow Through Cell

DO measured: In-well [ ] In water bailed [ ] In water pumped [✓] Other_____

WELL SAMPLING

Sampling Method: Submersible Pump [ ] Disposable Polyethylene Bailer [ ] Spigot [ ] Grab [ ] Other:_____

Sample Type: Natural [ ] Duplicate [ ] Other: _____

Sample Collected	Parameters	Sample Container	Preservative
Yes [✓] No [ ]	VOCs	3 – 40 ml vials	HCl
Yes [✓] No [ ]	Metals: dissolved [ ] or total [✓]	250 ml poly	HNO_3
Yes [ ] No [✓]	Nitrate as N	250 ml poly	H_2SO_4
Yes [ ] No [✓]	pH, SC, sulfate, chloride	250 ml poly	None
Yes [ ] No [ ]			
Yes [ ] No [ ]			

Laboratory: Pace Analytical Services, Inc., Billings, Montana Chain-of-Custody: Yes [x] No [ ]

Meter	Model No.	Calibration Date
Water level	—	
pH	YSI-556	12/3/19
SC		
ORP		
DO		

Decontamination

Liquinox: Yes [✓] No [ ] Scrub: Yes [ ] No [ ]

Potable H_2O: Yes [✓] No [ ] Steam: Yes [ ] No [ ]

DI water: Yes [✓] No [ ] Nitric Acid: Yes [ ] No [ ]

Comments: _____

12/5/19

Well	DTGW	
MW-14	31.68'	Calm Clear
MW-16	25.92'	No Smoke

- Conduct on-site mon. of flare
- VST Lvl = 5.87' : 1207 time

APPENDIX C

LABORATORY ANALYTICAL REPORT

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

January 22, 2020

Mark Pearson
Tetra Tech, Inc. - MT
851 Bridger Dr. Suite 6
Bozeman, MT 59715

RE: Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Dear Mark Pearson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 05, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on January 20, 2020, to switch samples to report 6020 dissolved metals except sample 027.

This report was further revised on January 21, 2020, to correct dilution factors on metals.

This report was further revised on January 22, 2020, to change 6020 metals units on sample 026 to mg/L.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Beverly Faraday
beverly.faraday@pacelabs.com
(406) 384-0559
Project Manager

Enclosures

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

CERTIFICATIONS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Pace Analytical Services Minneapolis

A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Massachusetts DWP Certification #: via MN 027-053-137
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Pace Analytical Services Montana

150 N. 9th Street, Billings, MT 59101
A2LA Certification: # 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012
Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
Washington Department of Ecology #: C993
Nevada Certificate # : MT00012

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE SUMMARY

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10501501001	LF-2	Water	12/03/19 15:20	12/05/19 08:45
10501501002	LF-3	Water	12/03/19 15:40	12/05/19 08:45
10501501003	MW-4	Water	12/02/19 12:20	12/05/19 08:45
10501501004	MW-5	Water	12/02/19 10:00	12/05/19 08:45
10501501005	MW-6	Water	12/03/19 09:30	12/05/19 08:45
10501501006	MW-7A	Water	12/02/19 13:00	12/05/19 08:45
10501501007	MW-8A	Water	12/02/19 16:30	12/05/19 08:45
10501501008	MW-9A	Water	12/02/19 11:30	12/05/19 08:45
10501501009	MW-10	Water	12/03/19 13:40	12/05/19 08:45
10501501010	MW-11	Water	12/02/19 14:40	12/05/19 08:45
10501501011	MW-12	Water	12/02/19 15:30	12/05/19 08:45
10501501012	MW-13	Water	12/02/19 13:30	12/05/19 08:45
10501501013	MW-15	Water	12/02/19 10:30	12/05/19 08:45
10501501014	MW-17	Water	12/02/19 17:00	12/05/19 08:45
10501501015	MW-18	Water	12/03/19 10:20	12/05/19 08:45
10501501016	MW-19	Water	12/04/19 11:50	12/05/19 08:45
10501501017	MW-20	Water	12/03/19 11:10	12/05/19 08:45
10501501018	MW-21	Water	12/04/19 09:50	12/05/19 08:45
10501501019	MW-22	Water	12/04/19 10:30	12/05/19 08:45
10501501020	MW-23	Water	12/04/19 11:10	12/05/19 08:45
10501501021	MW-24	Water	12/03/19 12:00	12/05/19 08:45
10501501022	MW-25	Water	12/03/19 12:30	12/05/19 08:45
10501501023	MW-26	Water	12/03/19 13:00	12/05/19 08:45
10501501024	MW-27	Water	12/04/19 12:30	12/05/19 08:45
10501501025	SHOP WELL	Water	12/03/19 10:00	12/05/19 08:45
10501501026	McILHATTEN SEEP	Water	12/03/19 14:00	12/05/19 08:45
10501501027	VALLEY VIEW VET WELL	Water	12/03/19 14:40	12/05/19 08:45
10501501028	DUP-1	Water	12/02/19 13:40	12/05/19 08:45
10501501029	DUP-2	Water	12/03/19 09:50	12/05/19 08:45
10501501030	DUP-3	Water	12/03/19 00:00	12/05/19 08:45
10501501031	Trip Blank-1	Water	12/02/19 00:00	12/05/19 08:45
10501501032	Trip Blank-2	Water	12/02/19 00:00	12/05/19 08:45

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE ANALYTE COUNT

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10501501001	**LF-2**	EPA 8260B	DS2	61	PASI-M
		EPA 353.2	KP2	1	PASI-MT
10501501002	**LF-3**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501003	**MW-4**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501004	**MW-5**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501005	**MW-6**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501006	**MW-7A**	EPA 8260B	DS2	61	PASI-M
		EPA 353.2	KP2	1	PASI-MT
10501501007	**MW-8A**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501008	**MW-9A**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501009	**MW-10**	EPA 8260B	DS2	61	PASI-M
		EPA 353.2	KP2	1	PASI-MT
10501501010	**MW-11**	EPA 8260B	DS2	61	PASI-M
		EPA 353.2	KP2	1	PASI-MT
10501501011	**MW-12**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501012	**MW-13**	EPA 6020	RJS	15	PASI-M

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE ANALYTE COUNT

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501013	**MW-15**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501014	**MW-17**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
10501501015	**MW-18**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
10501501016	**MW-19**	EPA 8260B	DS2	61	PASI-M
10501501017	**MW-20**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
10501501018	**MW-21**	EPA 8260B	DS2	61	PASI-M
10501501019	**MW-22**	EPA 8260B	DS2	61	PASI-M
10501501020	**MW-23**	EPA 8260B	DS2	61	PASI-M
10501501021	**MW-24**	EPA 8260B	DS2	61	PASI-M
10501501022	**MW-25**	EPA 8260B	DS2	61	PASI-M
10501501023	**MW-26**	EPA 8260B	DS2	61	PASI-M
10501501024	**MW-27**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501025	**SHOP WELL**	EPA 8260B	DS2	61	PASI-M
10501501026	**McILHATTEN SEEP**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 353.2	KP2	1	PASI-MT
10501501027	**VALLEY VIEW VET WELL**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
10501501028	**DUP-1**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE ANALYTE COUNT

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10501501029	**DUP-2**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501030	**DUP-3**	EPA 6020	RJS	15	PASI-M
		EPA 8260B	DS2	61	PASI-M
		EPA 300.0	CAC	2	PASI-MT
		EPA 353.2	KP2	1	PASI-MT
10501501031	**Trip Blank-1**	EPA 8260B	DS2	61	PASI-M
10501501032	**Trip Blank-2**	EPA 8260B	DS2	61	PASI-M

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PROJECT NARRATIVE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: Tetra Tech, Inc. - MT
Date: January 22, 2020

General Information:
1 sample was analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3020A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Method: **EPA 6020**
Description: 6020 MET ICPMS, Dissolved
Client: Tetra Tech, Inc. - MT
Date: January 22, 2020

General Information:
17 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3020A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 654638

B: Analyte was detected in the associated method blank.

- BLANK for HBN 654638 [MPRP/999 (Lab ID: 3519074)
  - Thallium, Dissolved

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Method: **EPA 8260B**
Description: 8260B MSV Low Level
Client: Tetra Tech, Inc. - MT
Date: January 22, 2020

General Information:
32 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

QC Batch: 648965

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

- LCS (Lab ID: 3490919)
  - 2-Propanol
- MS (Lab ID: 3490920)
  - 2-Propanol
- MSD (Lab ID: 3490921)
  - 2-Propanol

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 648965

L3: Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

- LCS (Lab ID: 3490919)
  - 2-Propanol

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Method: **EPA 300.0**
Description: 300.0 IC Anions
Client: Tetra Tech, Inc. - MT
Date: January 22, 2020

General Information:
16 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 650172

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10501501012,10502724001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 3496593)
  - Chloride

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 650172

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3496593)
  - Chloride

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Method: **EPA 353.2**
Description: 353.2 Nitrate + Nitrite pres.
Client: Tetra Tech, Inc. - MT
Date: January 22, 2020

General Information:
18 samples were analyzed for EPA 353.2. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 650170

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3496747)
  - Nitrogen, NO2 plus NO3

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: LF-2 **Lab ID: 10501501001** Collected: 12/03/19 15:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:57	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:57	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:57	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 13:57	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:57	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:57	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:57	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 13:57	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:57	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 13:57	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 13:57	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:57	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:57	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 13:57	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:57	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 13:57	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 13:57	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 13:57	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 13:57	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 13:57	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 13:57	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 13:57	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:57	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 13:57	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 13:57	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 13:57	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 13:57	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:57	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 13:57	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:57	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 13:57	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 13:57	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 13:57	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 13:57	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 13:57	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 13:57	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:57	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:57	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 13:57	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:57	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:57	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 13:57	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:57	100-42-5	
Tetrachloroethene	**0.67**	ug/L	0.50	0.17	1		12/06/19 13:57	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 13:57	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 13:57	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: LF-2 **Lab ID: 10501501001** Collected: 12/03/19 15:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 13:57	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:57	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 13:57	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 13:57	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 13:57	1330-20-7	
cis-1,2-Dichloroethene	**0.26J**	ug/L	0.50	0.15	1		12/06/19 13:57	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 13:57	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 13:57	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:57	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 13:57	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:57	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 13:57	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-136		1		12/06/19 13:57	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/06/19 13:57	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		12/06/19 13:57	460-00-4	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**3.7**	mg/L	0.40	0.21	20		12/16/19 17:37		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: LF-3 **Lab ID: 10501501002** Collected: 12/03/19 15:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00048J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:34	7440-38-2	
Barium, Dissolved	**0.044**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 02:34	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 02:34	7440-43-9	
Chromium, Dissolved	**0.0045**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 02:34	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 02:34	7440-48-4	
Copper, Dissolved	**0.017**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 02:34	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 02:34	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 02:34	7439-92-1	
Manganese, Dissolved	**0.00040J**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 02:34	7439-96-5	
Nickel, Dissolved	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 02:34	7440-02-0	
Selenium, Dissolved	**0.0014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:34	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 02:34	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 02:34	7440-28-0	
Vanadium, Dissolved	**0.0025**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 02:34	7440-62-2	
Zinc, Dissolved	**0.0057**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 22:49	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 21:55	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 21:55	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 21:55	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 21:55	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 21:55	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 21:55	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 21:55	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 21:55	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 21:55	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 21:55	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 21:55	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 21:55	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 21:55	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 21:55	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 21:55	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 21:55	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 21:55	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 21:55	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 21:55	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 21:55	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 21:55	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 21:55	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 21:55	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 21:55	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 21:55	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 21:55	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 21:55	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 21:55	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 21:55	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: LF-3 **Lab ID: 10501501002** Collected: 12/03/19 15:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 21:55	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 21:55	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 21:55	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 21:55	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 21:55	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 21:55	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 21:55	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 21:55	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 21:55	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 21:55	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 21:55	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 21:55	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 21:55	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 21:55	100-42-5	
Tetrachloroethene	**2.4**	ug/L	0.50	0.17	1		12/06/19 21:55	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 21:55	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 21:55	108-88-3	
Trichloroethene	**0.62**	ug/L	0.40	0.15	1		12/06/19 21:55	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 21:55	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 21:55	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 21:55	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 21:55	1330-20-7	
cis-1,2-Dichloroethene	**1.3**	ug/L	0.50	0.15	1		12/06/19 21:55	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 21:55	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 21:55	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 21:55	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 21:55	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 21:55	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 21:55	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%.	75-136		1		12/06/19 21:55	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 21:55	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		12/06/19 21:55	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**39.3**	mg/L	2.0	0.23	2		12/17/19 16:51	16887-00-6	
Sulfate	**24.3**	mg/L	2.0	0.73	2		12/17/19 16:51	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**4.6**	mg/L	0.20	0.10	10		12/16/19 17:39		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-4 **Lab ID: 10501501003** Collected: 12/02/19 12:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00050J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:50	7440-38-2	
Barium, Dissolved	**0.066**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 02:50	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 02:50	7440-43-9	
Chromium, Dissolved	**0.0013**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 02:50	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 02:50	7440-48-4	
Copper, Dissolved	**0.00053J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 02:50	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 02:50	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 02:50	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 02:50	7439-96-5	
Nickel, Dissolved	**0.00081**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 02:50	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:50	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 02:50	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 02:50	7440-28-0	
Vanadium, Dissolved	**0.0028**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 02:50	7440-62-2	
Zinc, Dissolved	**0.0027J**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 22:53	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 14:21	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:21	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:21	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 14:21	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 14:21	76-13-1	
1,1-Dichloroethane	**0.26J**	ug/L	0.50	0.17	1		12/06/19 14:21	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 14:21	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 14:21	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 14:21	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 14:21	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 14:21	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:21	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 14:21	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 14:21	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:21	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 14:21	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 14:21	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 14:21	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 14:21	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 14:21	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 14:21	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 14:21	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 14:21	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 14:21	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 14:21	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 14:21	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 14:21	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 14:21	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 14:21	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-4 **Lab ID: 10501501003** Collected: 12/02/19 12:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:21	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 14:21	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 14:21	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 14:21	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 14:21	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 14:21	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 14:21	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 14:21	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:21	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 14:21	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 14:21	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 14:21	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 14:21	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 14:21	100-42-5	
Tetrachloroethene	**0.88**	ug/L	0.50	0.17	1		12/06/19 14:21	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 14:21	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 14:21	108-88-3	
Trichloroethene	**0.38J**	ug/L	0.40	0.15	1		12/06/19 14:21	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 14:21	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 14:21	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 14:21	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 14:21	1330-20-7	
cis-1,2-Dichloroethene	**0.61**	ug/L	0.50	0.15	1		12/06/19 14:21	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 14:21	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 14:21	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 14:21	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 14:21	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 14:21	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 14:21	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-136		1		12/06/19 14:21	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 14:21	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/06/19 14:21	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**29.2**	mg/L	2.0	0.23	2		12/17/19 17:09	16887-00-6	
Sulfate	**19.0**	mg/L	2.0	0.73	2		12/17/19 17:09	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**2.4**	mg/L	0.20	0.10	10		12/16/19 17:46		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-5 **Lab ID: 10501501004** Collected: 12/02/19 10:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00076**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:38	7440-38-2	
Barium, Dissolved	**0.029**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 02:38	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 02:38	7440-43-9	
Chromium, Dissolved	**0.0026**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 02:38	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 02:38	7440-48-4	
Copper, Dissolved	**0.00043J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 02:38	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 02:38	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 02:38	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 02:38	7439-96-5	
Nickel, Dissolved	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 02:38	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:38	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 02:38	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 02:38	7440-28-0	
Vanadium, Dissolved	**0.0029**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 02:38	7440-62-2	
Zinc, Dissolved	**0.0028J**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 02:38	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 14:45	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:45	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:45	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 14:45	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 14:45	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:45	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 14:45	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 14:45	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 14:45	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 14:45	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 14:45	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:45	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 14:45	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 14:45	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:45	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 14:45	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 14:45	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 14:45	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 14:45	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 14:45	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 14:45	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 14:45	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 14:45	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 14:45	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 14:45	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 14:45	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 14:45	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 14:45	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 14:45	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-5 **Lab ID: 10501501004** Collected: 12/02/19 10:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:45	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 14:45	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 14:45	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 14:45	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 14:45	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 14:45	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 14:45	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 14:45	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 14:45	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 14:45	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 14:45	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 14:45	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 14:45	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 14:45	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 14:45	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 14:45	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 14:45	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 14:45	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 14:45	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 14:45	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 14:45	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 14:45	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 14:45	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 14:45	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 14:45	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 14:45	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 14:45	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 14:45	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 14:45	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-136		1		12/06/19 14:45	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 14:45	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/06/19 14:45	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**4.3**	mg/L	1.0	0.12	1		12/17/19 17:27	16887-00-6	
Sulfate	**9.4**	mg/L	1.0	0.37	1		12/17/19 17:27	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**4.9**	mg/L	0.40	0.21	20		12/16/19 17:47		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-6 **Lab ID: 10501501005** Collected: 12/03/19 09:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00055**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:42	7440-38-2	
Barium, Dissolved	**0.082**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 02:42	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 02:42	7440-43-9	
Chromium, Dissolved	**0.00066**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 02:42	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 02:42	7440-48-4	
Copper, Dissolved	**0.00046J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 02:42	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 02:42	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 02:42	7439-92-1	
Manganese, Dissolved	**0.074**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 02:42	7439-96-5	
Nickel, Dissolved	**0.0029**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 02:42	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:42	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 02:42	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 02:42	7440-28-0	
Vanadium, Dissolved	**0.0027**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 02:42	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 02:42	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 22:19	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:19	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:19	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 22:19	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 22:19	76-13-1	
1,1-Dichloroethane	**0.87**	ug/L	0.50	0.17	1		12/06/19 22:19	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 22:19	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 22:19	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 22:19	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 22:19	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 22:19	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:19	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 22:19	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 22:19	78-87-5	
1,4-Dichlorobenzene	**0.23J**	ug/L	0.50	0.17	1		12/06/19 22:19	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 22:19	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 22:19	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 22:19	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 22:19	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 22:19	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 22:19	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 22:19	107-13-1	
Benzene	**0.19J**	ug/L	0.50	0.10	1		12/06/19 22:19	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 22:19	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 22:19	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 22:19	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 22:19	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 22:19	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 22:19	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-6 **Lab ID: 10501501005** Collected: 12/03/19 09:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:19	108-90-7	
Chloroethane	**0.93J**	ug/L	1.0	0.49	1		12/06/19 22:19	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 22:19	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 22:19	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 22:19	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 22:19	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 22:19	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 22:19	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:19	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 22:19	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 22:19	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 22:19	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 22:19	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 22:19	100-42-5	
Tetrachloroethene	**0.31J**	ug/L	0.50	0.17	1		12/06/19 22:19	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 22:19	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 22:19	108-88-3	
Trichloroethene	**0.26J**	ug/L	0.40	0.15	1		12/06/19 22:19	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 22:19	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 22:19	108-05-4	
Vinyl chloride	**1.8**	ug/L	0.20	0.092	1		12/06/19 22:19	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 22:19	1330-20-7	
cis-1,2-Dichloroethene	**1.6**	ug/L	0.50	0.15	1		12/06/19 22:19	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 22:19	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 22:19	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 22:19	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 22:19	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 22:19	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 22:19	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%.	75-136		1		12/06/19 22:19	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 22:19	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/06/19 22:19	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**38.7**	mg/L	2.0	0.23	2		12/17/19 18:04	16887-00-6	
Sulfate	**26.2**	mg/L	2.0	0.73	2		12/17/19 18:04	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**0.80**	mg/L	0.10	0.052	5		12/16/19 17:49		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-7A **Lab ID: 10501501006** Collected: 12/02/19 13:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:09	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:09	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:09	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 15:09	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:09	76-13-1	
1,1-Dichloroethane	**2.0**	ug/L	0.50	0.17	1		12/06/19 15:09	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:09	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 15:09	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:09	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 15:09	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 15:09	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:09	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:09	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 15:09	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:09	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 15:09	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 15:09	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 15:09	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 15:09	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 15:09	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 15:09	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 15:09	107-13-1	
Benzene	**0.19J**	ug/L	0.50	0.10	1		12/06/19 15:09	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 15:09	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 15:09	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 15:09	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 15:09	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:09	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 15:09	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:09	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 15:09	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 15:09	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 15:09	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 15:09	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 15:09	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 15:09	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 15:09	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:09	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 15:09	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:09	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:09	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 15:09	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:09	100-42-5	
Tetrachloroethene	**1.6**	ug/L	0.50	0.17	1		12/06/19 15:09	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 15:09	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 15:09	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-7A **Lab ID: 10501501006** Collected: 12/02/19 13:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**1.7**	ug/L	0.40	0.15	1		12/06/19 15:09	79-01-6	
Trichlorofluoromethane	**0.44J**	ug/L	1.0	0.23	1		12/06/19 15:09	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 15:09	108-05-4	
Vinyl chloride	**0.36**	ug/L	0.20	0.092	1		12/06/19 15:09	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 15:09	1330-20-7	
cis-1,2-Dichloroethene	**0.57**	ug/L	0.50	0.15	1		12/06/19 15:09	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 15:09	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 15:09	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 15:09	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 15:09	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:09	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 15:09	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-136		1		12/06/19 15:09	17060-07-0	
Toluene-d8 (S)	111	%.	75-125		1		12/06/19 15:09	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		12/06/19 15:09	460-00-4	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**4.8**	mg/L	0.40	0.21	20		12/16/19 17:50		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-8A **Lab ID: 10501501007** Collected: 12/02/19 16:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00071**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:46	7440-38-2	
Barium, Dissolved	**0.068**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 02:46	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 02:46	7440-43-9	
Chromium, Dissolved	**0.0070**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 02:46	7440-47-3	
Cobalt, Dissolved	**0.000090J**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 02:46	7440-48-4	
Copper, Dissolved	**0.00081J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 02:46	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 02:46	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 02:46	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 02:46	7439-96-5	
Nickel, Dissolved	**0.0012**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 02:46	7440-02-0	
Selenium, Dissolved	**0.0017**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 02:46	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 02:46	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 02:46	7440-28-0	
Vanadium, Dissolved	**0.0027**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 02:46	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 02:46	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:33	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:33	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:33	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 15:33	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:33	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:33	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:33	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 15:33	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:33	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 15:33	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 15:33	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:33	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:33	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 15:33	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:33	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 15:33	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 15:33	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 15:33	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 15:33	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 15:33	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 15:33	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 15:33	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 15:33	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 15:33	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 15:33	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 15:33	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 15:33	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:33	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 15:33	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-8A **Lab ID: 10501501007** Collected: 12/02/19 16:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:33	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 15:33	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 15:33	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 15:33	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 15:33	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 15:33	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 15:33	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 15:33	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:33	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 15:33	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:33	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:33	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 15:33	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:33	100-42-5	
Tetrachloroethene	**0.56**	ug/L	0.50	0.17	1		12/06/19 15:33	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 15:33	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 15:33	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 15:33	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 15:33	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 15:33	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 15:33	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 15:33	1330-20-7	
cis-1,2-Dichloroethene	**0.51**	ug/L	0.50	0.15	1		12/06/19 15:33	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 15:33	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 15:33	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 15:33	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 15:33	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:33	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 15:33	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/06/19 15:33	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/06/19 15:33	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/06/19 15:33	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**61.6**	mg/L	5.0	0.58	5		12/17/19 18:22	16887-00-6	
Sulfate	**40.4**	mg/L	5.0	1.8	5		12/17/19 18:22	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**17.0**	mg/L	1.0	0.52	50		12/16/19 17:51		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-9A **Lab ID: 10501501008** Collected: 12/02/19 11:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00058**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:27	7440-38-2	
Barium, Dissolved	**0.078**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:27	7440-39-3	
Cadmium, Dissolved	**0.000032J**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:27	7440-43-9	
Chromium, Dissolved	**0.0019**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:27	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:27	7440-48-4	
Copper, Dissolved	**0.00053J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:27	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:27	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:27	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:27	7439-96-5	
Nickel, Dissolved	**0.00090**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:27	7440-02-0	
Selenium, Dissolved	**0.00014J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:27	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:27	7440-22-4	
Thallium, Dissolved	**0.000090J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:27	7440-28-0	B
Vanadium, Dissolved	**0.0034**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:27	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:27	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:57	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:57	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:57	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 15:57	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:57	76-13-1	
1,1-Dichloroethane	**0.36J**	ug/L	0.50	0.17	1		12/06/19 15:57	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:57	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 15:57	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 15:57	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 15:57	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 15:57	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:57	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 15:57	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 15:57	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:57	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 15:57	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 15:57	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 15:57	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 15:57	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 15:57	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 15:57	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 15:57	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 15:57	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 15:57	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 15:57	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 15:57	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 15:57	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:57	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 15:57	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-9A **Lab ID: 10501501008** Collected: 12/02/19 11:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 15:57	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 15:57	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 15:57	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 15:57	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 15:57	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 15:57	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 15:57	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 15:57	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 15:57	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 15:57	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:57	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 15:57	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 15:57	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 15:57	100-42-5	
Tetrachloroethene	**1.3**	ug/L	0.50	0.17	1		12/06/19 15:57	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 15:57	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 15:57	108-88-3	
Trichloroethene	**0.65**	ug/L	0.40	0.15	1		12/06/19 15:57	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 15:57	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 15:57	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 15:57	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 15:57	1330-20-7	
cis-1,2-Dichloroethene	**0.76**	ug/L	0.50	0.15	1		12/06/19 15:57	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 15:57	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 15:57	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 15:57	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 15:57	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 15:57	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 15:57	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/06/19 15:57	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/06/19 15:57	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		12/06/19 15:57	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**39.3**	mg/L	5.0	0.58	5		12/17/19 19:17	16887-00-6	
Sulfate	**20.0**	mg/L	5.0	1.8	5		12/17/19 19:17	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**2.3**	mg/L	0.20	0.10	10		12/16/19 17:53		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-10 **Lab ID: 10501501009** Collected: 12/03/19 13:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 22:43	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:43	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:43	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 22:43	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 22:43	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:43	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 22:43	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 22:43	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 22:43	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 22:43	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 22:43	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:43	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 22:43	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 22:43	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:43	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 22:43	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 22:43	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 22:43	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 22:43	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 22:43	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 22:43	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 22:43	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 22:43	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 22:43	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 22:43	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 22:43	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 22:43	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 22:43	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 22:43	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:43	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 22:43	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 22:43	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 22:43	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 22:43	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 22:43	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 22:43	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 22:43	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 22:43	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 22:43	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 22:43	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 22:43	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 22:43	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 22:43	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 22:43	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 22:43	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 22:43	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-10 **Lab ID: 10501501009** Collected: 12/03/19 13:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**0.25J**	ug/L	0.40	0.15	1		12/06/19 22:43	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 22:43	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 22:43	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 22:43	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 22:43	1330-20-7	
cis-1,2-Dichloroethene	**0.27J**	ug/L	0.50	0.15	1		12/06/19 22:43	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 22:43	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 22:43	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 22:43	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 22:43	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 22:43	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 22:43	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/06/19 22:43	17060-07-0	
Toluene-d8 (S)	117	%.	75-125		1		12/06/19 22:43	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		12/06/19 22:43	460-00-4	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**<0.010**	mg/L	0.020	0.010	1		12/17/19 14:10		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-11 **Lab ID: 10501501010** Collected: 12/02/19 14:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 16:21	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:21	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:21	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 16:21	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 16:21	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:21	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 16:21	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 16:21	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 16:21	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 16:21	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 16:21	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:21	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 16:21	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 16:21	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:21	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 16:21	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 16:21	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 16:21	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 16:21	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 16:21	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 16:21	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 16:21	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 16:21	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 16:21	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 16:21	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 16:21	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 16:21	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 16:21	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 16:21	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:21	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 16:21	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 16:21	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 16:21	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 16:21	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 16:21	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 16:21	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 16:21	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:21	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 16:21	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 16:21	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 16:21	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 16:21	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 16:21	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:21	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 16:21	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 16:21	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-11 **Lab ID: 10501501010** Collected: 12/02/19 14:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 16:21	79-01-6	
Trichlorofluoromethane	**2.3**	ug/L	1.0	0.23	1		12/06/19 16:21	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 16:21	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 16:21	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 16:21	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 16:21	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 16:21	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 16:21	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 16:21	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 16:21	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 16:21	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 16:21	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-136		1		12/06/19 16:21	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/06/19 16:21	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		12/06/19 16:21	460-00-4	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**6.8**	mg/L	0.40	0.21	20		12/17/19 14:13		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-12 **Lab ID: 10501501011** Collected: 12/02/19 15:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.0023**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:31	7440-38-2	
Barium, Dissolved	**0.15**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:31	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:31	7440-43-9	
Chromium, Dissolved	**<0.00021**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:31	7440-47-3	
Cobalt, Dissolved	**0.0052**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:31	7440-48-4	
Copper, Dissolved	**0.00050J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:31	7440-50-8	
Iron, Dissolved	**3.5**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:31	7439-89-6	
Lead, Dissolved	**0.000050J**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:31	7439-92-1	
Manganese, Dissolved	**6.7**	mg/L	0.010	0.0045	20	12/10/19 05:38	12/13/19 22:39	7439-96-5	
Nickel, Dissolved	**0.0051**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:31	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:31	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:31	7440-22-4	
Thallium, Dissolved	**0.000081J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:31	7440-28-0	B
Vanadium, Dissolved	**<0.00027**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:31	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:31	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 16:45	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:45	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:45	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 16:45	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 16:45	76-13-1	
1,1-Dichloroethane	**1.6**	ug/L	0.50	0.17	1		12/06/19 16:45	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 16:45	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 16:45	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 16:45	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 16:45	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 16:45	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:45	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 16:45	107-06-2	
1,2-Dichloropropane	**0.40J**	ug/L	4.0	0.16	1		12/06/19 16:45	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:45	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 16:45	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 16:45	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 16:45	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 16:45	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 16:45	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 16:45	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 16:45	107-13-1	
Benzene	**0.60**	ug/L	0.50	0.10	1		12/06/19 16:45	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 16:45	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 16:45	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 16:45	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 16:45	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 16:45	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 16:45	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-12 **Lab ID: 10501501011** Collected: 12/02/19 15:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:45	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 16:45	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 16:45	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 16:45	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 16:45	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 16:45	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 16:45	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 16:45	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 16:45	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 16:45	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 16:45	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 16:45	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 16:45	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 16:45	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 16:45	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 16:45	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 16:45	108-88-3	
Trichloroethene	**0.80**	ug/L	0.40	0.15	1		12/06/19 16:45	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 16:45	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 16:45	108-05-4	
Vinyl chloride	**8.3**	ug/L	0.20	0.092	1		12/06/19 16:45	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 16:45	1330-20-7	
cis-1,2-Dichloroethene	**9.1**	ug/L	0.50	0.15	1		12/06/19 16:45	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 16:45	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 16:45	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 16:45	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 16:45	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 16:45	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 16:45	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/06/19 16:45	17060-07-0	
Toluene-d8 (S)	111	%.	75-125		1		12/06/19 16:45	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/06/19 16:45	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**38.4**	mg/L	2.0	0.23	2		12/17/19 19:36	16887-00-6	
Sulfate	**30.8**	mg/L	2.0	0.73	2		12/17/19 19:36	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**0.012J**	mg/L	0.020	0.010	1		12/17/19 14:20		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-13 **Lab ID: 10501501012** Collected: 12/02/19 13:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00043J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:35	7440-38-2	
Barium, Dissolved	**0.098**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:35	7440-39-3	
Cadmium, Dissolved	**0.00019**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/17/19 10:17	7440-43-9	
Chromium, Dissolved	**<0.00021**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:35	7440-47-3	
Cobalt, Dissolved	**0.00063**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:35	7440-48-4	
Copper, Dissolved	**0.00055J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:35	7440-50-8	
Iron, Dissolved	**0.038J**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:35	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:35	7439-92-1	
Manganese, Dissolved	**2.1**	mg/L	0.0050	0.0023	10	12/10/19 05:38	12/13/19 22:44	7439-96-5	
Nickel, Dissolved	**0.0054**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:35	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:35	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:35	7440-22-4	
Thallium, Dissolved	**0.000073J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:35	7440-28-0	B
Vanadium, Dissolved	**0.0025**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:35	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:35	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:08	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:08	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:08	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 17:08	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:08	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:08	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:08	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 17:08	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:08	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 17:08	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 17:08	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:08	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:08	107-06-2	
1,2-Dichloropropane	**0.29J**	ug/L	4.0	0.16	1		12/06/19 17:08	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:08	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 17:08	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 17:08	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 17:08	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 17:08	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 17:08	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 17:08	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 17:08	107-13-1	
Benzene	**0.53**	ug/L	0.50	0.10	1		12/06/19 17:08	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 17:08	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 17:08	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 17:08	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 17:08	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:08	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 17:08	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-13 **Lab ID: 10501501012** Collected: 12/02/19 13:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**0.28J**	ug/L	0.50	0.17	1		12/06/19 17:08	108-90-7	
Chloroethane	**1.2**	ug/L	1.0	0.49	1		12/06/19 17:08	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 17:08	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 17:08	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 17:08	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 17:08	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 17:08	74-95-3	
Dichlorodifluoromethane	**0.65J**	ug/L	1.0	0.23	1		12/06/19 17:08	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:08	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 17:08	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:08	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:08	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 17:08	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:08	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:08	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 17:08	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 17:08	108-88-3	
Trichloroethene	**0.26J**	ug/L	0.40	0.15	1		12/06/19 17:08	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 17:08	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 17:08	108-05-4	
Vinyl chloride	**10.2**	ug/L	0.20	0.092	1		12/06/19 17:08	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 17:08	1330-20-7	
cis-1,2-Dichloroethene	**0.95**	ug/L	0.50	0.15	1		12/06/19 17:08	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 17:08	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 17:08	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 17:08	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 17:08	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:08	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 17:08	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/06/19 17:08	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/06/19 17:08	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/06/19 17:08	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**45.2**	mg/L	5.0	0.58	5		12/18/19 10:23	16887-00-6	M1
Sulfate	**26.2**	mg/L	2.0	0.73	2		12/17/19 19:54	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**<0.010**	mg/L	0.020	0.010	1		12/17/19 14:21		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-15 **Lab ID: 10501501013** Collected: 12/02/19 10:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00039J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:39	7440-38-2	
Barium, Dissolved	**0.040**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:39	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:39	7440-43-9	
Chromium, Dissolved	**0.0025**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:39	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:39	7440-48-4	
Copper, Dissolved	**<0.00043**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:39	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:39	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:39	7439-92-1	
Manganese, Dissolved	**0.0018**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:39	7439-96-5	
Nickel, Dissolved	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:39	7440-02-0	
Selenium, Dissolved	**0.00018J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:39	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:39	7440-22-4	
Thallium, Dissolved	**0.000058J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:39	7440-28-0	B
Vanadium, Dissolved	**0.0018**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:39	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:39	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:32	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:32	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:32	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 17:32	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:32	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:32	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:32	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 17:32	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:32	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 17:32	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 17:32	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:32	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:32	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 17:32	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:32	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 17:32	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 17:32	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 17:32	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 17:32	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 17:32	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 17:32	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 17:32	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 17:32	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 17:32	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 17:32	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 17:32	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 17:32	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:32	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 17:32	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-15 **Lab ID: 10501501013** Collected: 12/02/19 10:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:32	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 17:32	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 17:32	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 17:32	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 17:32	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 17:32	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 17:32	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 17:32	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:32	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 17:32	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:32	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:32	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 17:32	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:32	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:32	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 17:32	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 17:32	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 17:32	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 17:32	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 17:32	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 17:32	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 17:32	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 17:32	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 17:32	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 17:32	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 17:32	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 17:32	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:32	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 17:32	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/06/19 17:32	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/06/19 17:32	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/06/19 17:32	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**3.7**	mg/L	1.0	0.12	1		12/17/19 20:30	16887-00-6	
Sulfate	**14.4**	mg/L	1.0	0.37	1		12/17/19 20:30	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**3.9**	mg/L	0.20	0.10	10		12/17/19 14:22		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-17 **Lab ID: 10501501014** Collected: 12/02/19 17:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00059**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:43	7440-38-2	
Barium, Dissolved	**0.14**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:43	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:43	7440-43-9	
Chromium, Dissolved	**0.0018**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:43	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:43	7440-48-4	
Copper, Dissolved	**0.00052J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:43	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:43	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:43	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:43	7439-96-5	
Nickel, Dissolved	**0.00037J**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:43	7440-02-0	
Selenium, Dissolved	**0.0020**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:43	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:43	7440-22-4	
Thallium, Dissolved	**0.000050J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:43	7440-28-0	B
Vanadium, Dissolved	**0.0021**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:43	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:43	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:56	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:56	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:56	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 17:56	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:56	76-13-1	
1,1-Dichloroethane	**0.85**	ug/L	0.50	0.17	1		12/06/19 17:56	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:56	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 17:56	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 17:56	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 17:56	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 17:56	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:56	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 17:56	107-06-2	
1,2-Dichloropropane	**1.5J**	ug/L	4.0	0.16	1		12/06/19 17:56	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:56	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 17:56	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 17:56	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 17:56	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 17:56	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 17:56	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 17:56	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 17:56	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 17:56	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 17:56	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 17:56	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 17:56	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 17:56	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:56	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 17:56	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-17 **Lab ID: 10501501014** Collected: 12/02/19 17:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 17:56	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 17:56	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 17:56	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 17:56	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 17:56	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 17:56	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 17:56	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 17:56	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 17:56	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 17:56	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:56	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 17:56	1634-04-4	
Methylene Chloride	**12.3**	ug/L	4.0	0.98	1		12/06/19 17:56	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 17:56	100-42-5	
Tetrachloroethene	**8.9**	ug/L	0.50	0.17	1		12/06/19 17:56	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 17:56	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 17:56	108-88-3	
Trichloroethene	**4.4**	ug/L	0.40	0.15	1		12/06/19 17:56	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 17:56	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 17:56	108-05-4	
Vinyl chloride	**0.30**	ug/L	0.20	0.092	1		12/06/19 17:56	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 17:56	1330-20-7	
cis-1,2-Dichloroethene	**24.4**	ug/L	0.50	0.15	1		12/06/19 17:56	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 17:56	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 17:56	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 17:56	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 17:56	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 17:56	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 17:56	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/06/19 17:56	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 17:56	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/06/19 17:56	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**97.9**	mg/L	10.0	1.2	10		12/18/19 11:00	16887-00-6	
Sulfate	**36.6**	mg/L	2.0	0.73	2		12/17/19 20:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-18 **Lab ID: 10501501015** Collected: 12/03/19 10:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.0078**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:47	7440-38-2	
Barium, Dissolved	**0.23**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:47	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:47	7440-43-9	
Chromium, Dissolved	**0.00045J**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:47	7440-47-3	
Cobalt, Dissolved	**0.014**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:47	7440-48-4	
Copper, Dissolved	**<0.00043**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:47	7440-50-8	
Iron, Dissolved	**3.7**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:47	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:47	7439-92-1	
Manganese, Dissolved	**10.5**	mg/L	0.010	0.0045	20	12/10/19 05:38	12/13/19 23:27	7439-96-5	
Nickel, Dissolved	**0.027**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:47	7440-02-0	
Selenium, Dissolved	**0.00040J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:47	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:47	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:47	7440-28-0	
Vanadium, Dissolved	**0.0010**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:47	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:47	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 23:07	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:07	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:07	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 23:07	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:07	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:07	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:07	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 23:07	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 23:07	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 23:07	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 23:07	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:07	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:07	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 23:07	78-87-5	
1,4-Dichlorobenzene	**1.3**	ug/L	0.50	0.17	1		12/06/19 23:07	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 23:07	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 23:07	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 23:07	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 23:07	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 23:07	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 23:07	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 23:07	107-13-1	
Benzene	**0.45J**	ug/L	0.50	0.10	1		12/06/19 23:07	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 23:07	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 23:07	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 23:07	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 23:07	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:07	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 23:07	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-18 **Lab ID: 10501501015** Collected: 12/03/19 10:20 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**0.33J**	ug/L	0.50	0.17	1		12/06/19 23:07	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 23:07	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 23:07	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 23:07	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 23:07	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 23:07	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 23:07	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:07	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:07	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 23:07	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:07	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:07	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 23:07	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:07	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:07	127-18-4	
Tetrahydrofuran	**8.8J**	ug/L	10.0	2.2	1		12/06/19 23:07	109-99-9	
Toluene	**0.28J**	ug/L	0.50	0.083	1		12/06/19 23:07	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 23:07	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:07	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 23:07	108-05-4	
Vinyl chloride	**2.2**	ug/L	0.20	0.092	1		12/06/19 23:07	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 23:07	1330-20-7	
cis-1,2-Dichloroethene	**1.0**	ug/L	0.50	0.15	1		12/06/19 23:07	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 23:07	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 23:07	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 23:07	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 23:07	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:07	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 23:07	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/06/19 23:07	17060-07-0	
Toluene-d8 (S)	111	%.	75-125		1		12/06/19 23:07	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/06/19 23:07	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**281**	mg/L	50.0	5.8	50		12/17/19 21:07	16887-00-6	
Sulfate	**8.7**	mg/L	5.0	1.8	5		12/18/19 11:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-19 **Lab ID: 10501501016** Collected: 12/04/19 11:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 23:31	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:31	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:31	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 23:31	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:31	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:31	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:31	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 23:31	96-18-4	
1,2,4-Trimethylbenzene	**0.31J**	ug/L	0.50	0.20	1		12/06/19 23:31	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 23:31	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 23:31	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:31	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:31	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 23:31	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:31	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 23:31	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 23:31	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 23:31	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 23:31	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 23:31	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 23:31	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 23:31	107-13-1	
Benzene	**0.11J**	ug/L	0.50	0.10	1		12/06/19 23:31	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 23:31	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 23:31	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 23:31	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 23:31	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:31	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 23:31	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:31	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 23:31	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 23:31	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 23:31	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 23:31	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 23:31	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 23:31	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:31	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:31	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 23:31	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:31	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:31	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 23:31	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:31	100-42-5	
Tetrachloroethene	**0.68**	ug/L	0.50	0.17	1		12/06/19 23:31	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 23:31	109-99-9	
Toluene	**0.61**	ug/L	0.50	0.083	1		12/06/19 23:31	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-19 **Lab ID: 10501501016** Collected: 12/04/19 11:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 23:31	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:31	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 23:31	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 23:31	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 23:31	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 23:31	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 23:31	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 23:31	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 23:31	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 23:31	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:31	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 23:31	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/06/19 23:31	17060-07-0	
Toluene-d8 (S)	116	%.	75-125		1		12/06/19 23:31	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/06/19 23:31	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-20 **Lab ID: 10501501017** Collected: 12/03/19 11:10 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00044J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:51	7440-38-2	
Barium, Dissolved	**0.092**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:51	7440-39-3	
Cadmium, Dissolved	**0.000032J**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:51	7440-43-9	
Chromium, Dissolved	**0.0095**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:51	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:51	7440-48-4	
Copper, Dissolved	**0.0014**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:51	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:51	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:51	7439-92-1	
Manganese, Dissolved	**0.0068**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:51	7439-96-5	
Nickel, Dissolved	**0.00020J**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:51	7440-02-0	
Selenium, Dissolved	**0.0026**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:51	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:51	7440-22-4	
Thallium, Dissolved	**0.000049J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:51	7440-28-0	B
Vanadium, Dissolved	**0.00072J**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:51	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:51	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 23:55	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:55	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:55	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 23:55	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:55	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:55	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:55	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 23:55	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 23:55	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 23:55	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 23:55	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:55	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 23:55	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 23:55	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:55	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 23:55	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 23:55	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 23:55	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 23:55	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 23:55	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 23:55	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 23:55	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 23:55	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 23:55	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 23:55	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 23:55	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 23:55	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:55	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 23:55	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-20 **Lab ID: 10501501017** Collected: 12/03/19 11:10 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 23:55	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 23:55	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 23:55	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 23:55	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 23:55	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 23:55	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 23:55	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:55	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 23:55	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 23:55	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:55	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 23:55	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 23:55	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 23:55	100-42-5	
Tetrachloroethene	**6.8**	ug/L	0.50	0.17	1		12/06/19 23:55	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 23:55	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 23:55	108-88-3	
Trichloroethene	**0.16J**	ug/L	0.40	0.15	1		12/06/19 23:55	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 23:55	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 23:55	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 23:55	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 23:55	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 23:55	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 23:55	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 23:55	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 23:55	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 23:55	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 23:55	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 23:55	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/06/19 23:55	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/06/19 23:55	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/06/19 23:55	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**38.1**	mg/L	10.0	1.2	10		12/17/19 21:25	16887-00-6	
Sulfate	**50.5**	mg/L	10.0	3.7	10		12/17/19 21:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-21 **Lab ID: 10501501018** Collected: 12/04/19 09:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 00:18	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:18	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:18	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 00:18	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 00:18	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:18	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 00:18	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 00:18	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 00:18	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 00:18	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 00:18	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:18	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 00:18	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 00:18	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:18	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 00:18	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 00:18	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 00:18	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 00:18	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 00:18	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 00:18	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 00:18	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 00:18	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 00:18	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 00:18	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 00:18	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 00:18	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 00:18	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 00:18	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:18	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 00:18	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 00:18	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 00:18	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 00:18	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 00:18	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 00:18	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 00:18	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:18	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 00:18	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 00:18	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 00:18	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 00:18	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 00:18	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:18	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 00:18	109-99-9	
Toluene	**0.13J**	ug/L	0.50	0.083	1		12/07/19 00:18	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
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(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-21 **Lab ID: 10501501018** Collected: 12/04/19 09:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 00:18	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 00:18	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 00:18	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 00:18	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 00:18	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/07/19 00:18	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 00:18	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 00:18	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 00:18	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 00:18	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 00:18	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 00:18	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-136		1		12/07/19 00:18	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/07/19 00:18	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/07/19 00:18	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-22 **Lab ID: 10501501019** Collected: 12/04/19 10:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/09/19 22:55	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/09/19 22:55	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 22:55	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/09/19 22:55	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 22:55	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 22:55	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/09/19 22:55	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/09/19 22:55	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/09/19 22:55	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/09/19 22:55	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/09/19 22:55	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 22:55	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 22:55	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/09/19 22:55	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 22:55	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/09/19 22:55	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/09/19 22:55	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/09/19 22:55	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/09/19 22:55	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/09/19 22:55	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/09/19 22:55	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/09/19 22:55	107-13-1	
Benzene	**0.13J**	ug/L	0.50	0.10	1		12/09/19 22:55	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/09/19 22:55	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/09/19 22:55	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/09/19 22:55	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/09/19 22:55	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/09/19 22:55	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/09/19 22:55	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 22:55	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/09/19 22:55	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/09/19 22:55	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/09/19 22:55	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/09/19 22:55	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/09/19 22:55	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/09/19 22:55	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 22:55	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 22:55	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/09/19 22:55	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/09/19 22:55	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/09/19 22:55	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/09/19 22:55	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/09/19 22:55	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 22:55	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/09/19 22:55	109-99-9	
Toluene	**0.27J**	ug/L	0.50	0.083	1		12/09/19 22:55	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-22 **Lab ID: 10501501019** Collected: 12/04/19 10:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/09/19 22:55	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 22:55	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/09/19 22:55	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/09/19 22:55	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/09/19 22:55	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/09/19 22:55	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/09/19 22:55	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/09/19 22:55	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/09/19 22:55	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/09/19 22:55	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/09/19 22:55	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/09/19 22:55	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/09/19 22:55	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/09/19 22:55	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		12/09/19 22:55	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-23 **Lab ID: 10501501020** Collected: 12/04/19 11:10 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/09/19 23:19	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:19	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:19	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/09/19 23:19	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 23:19	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:19	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/09/19 23:19	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/09/19 23:19	96-18-4	
1,2,4-Trimethylbenzene	**0.21J**	ug/L	0.50	0.20	1		12/09/19 23:19	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/09/19 23:19	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/09/19 23:19	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:19	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 23:19	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/09/19 23:19	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:19	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/09/19 23:19	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/09/19 23:19	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/09/19 23:19	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/09/19 23:19	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/09/19 23:19	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/09/19 23:19	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/09/19 23:19	107-13-1	
Benzene	**0.20J**	ug/L	0.50	0.10	1		12/09/19 23:19	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/09/19 23:19	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/09/19 23:19	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/09/19 23:19	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/09/19 23:19	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/09/19 23:19	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/09/19 23:19	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:19	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/09/19 23:19	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/09/19 23:19	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/09/19 23:19	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/09/19 23:19	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/09/19 23:19	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/09/19 23:19	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 23:19	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:19	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/09/19 23:19	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/09/19 23:19	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/09/19 23:19	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/09/19 23:19	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/09/19 23:19	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:19	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/09/19 23:19	109-99-9	
Toluene	**0.51**	ug/L	0.50	0.083	1		12/09/19 23:19	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-23 **Lab ID: 10501501020** Collected: 12/04/19 11:10 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/09/19 23:19	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 23:19	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/09/19 23:19	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/09/19 23:19	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/09/19 23:19	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/09/19 23:19	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/09/19 23:19	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/09/19 23:19	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/09/19 23:19	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/09/19 23:19	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/09/19 23:19	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/09/19 23:19	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%.	75-136		1		12/09/19 23:19	17060-07-0	
Toluene-d8 (S)	115	%.	75-125		1		12/09/19 23:19	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		12/09/19 23:19	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-24 **Lab ID: 10501501021** Collected: 12/03/19 12:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 00:42	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:42	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:42	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 00:42	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 00:42	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:42	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 00:42	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 00:42	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 00:42	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 00:42	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 00:42	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:42	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 00:42	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 00:42	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:42	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 00:42	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 00:42	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 00:42	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 00:42	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 00:42	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 00:42	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 00:42	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 00:42	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 00:42	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 00:42	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 00:42	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 00:42	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 00:42	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 00:42	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 00:42	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 00:42	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 00:42	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 00:42	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 00:42	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 00:42	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 00:42	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 00:42	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 00:42	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 00:42	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 00:42	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 00:42	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 00:42	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 00:42	100-42-5	
Tetrachloroethene	**0.80**	ug/L	0.50	0.17	1		12/07/19 00:42	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 00:42	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 00:42	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-24 **Lab ID: 10501501021** Collected: 12/03/19 12:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 00:42	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 00:42	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 00:42	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 00:42	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 00:42	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/07/19 00:42	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 00:42	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 00:42	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 00:42	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 00:42	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 00:42	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 00:42	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/07/19 00:42	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/07/19 00:42	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/07/19 00:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-25 **Lab ID: 10501501022** Collected: 12/03/19 12:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:06	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:06	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:06	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 01:06	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:06	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:06	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:06	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 01:06	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:06	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 01:06	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 01:06	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:06	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:06	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 01:06	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:06	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 01:06	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 01:06	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 01:06	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 01:06	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 01:06	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 01:06	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 01:06	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:06	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 01:06	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 01:06	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 01:06	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 01:06	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:06	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 01:06	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:06	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 01:06	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 01:06	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 01:06	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 01:06	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 01:06	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 01:06	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 01:06	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:06	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 01:06	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:06	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:06	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 01:06	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:06	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:06	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 01:06	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 01:06	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-25 **Lab ID: 10501501022** Collected: 12/03/19 12:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 01:06	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 01:06	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 01:06	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 01:06	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 01:06	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/07/19 01:06	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 01:06	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 01:06	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:06	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 01:06	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:06	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 01:06	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/07/19 01:06	17060-07-0	
Toluene-d8 (S)	111	%.	75-125		1		12/07/19 01:06	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/07/19 01:06	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-26 **Lab ID: 10501501023** Collected: 12/03/19 13:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:30	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:30	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:30	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 01:30	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:30	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:30	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:30	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 01:30	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:30	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 01:30	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 01:30	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:30	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:30	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 01:30	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:30	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 01:30	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 01:30	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 01:30	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 01:30	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 01:30	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 01:30	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 01:30	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:30	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 01:30	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 01:30	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 01:30	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 01:30	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:30	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 01:30	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:30	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 01:30	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 01:30	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 01:30	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 01:30	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 01:30	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 01:30	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 01:30	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:30	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 01:30	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:30	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:30	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 01:30	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:30	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:30	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 01:30	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 01:30	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-26 **Lab ID: 10501501023** Collected: 12/03/19 13:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 01:30	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 01:30	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 01:30	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 01:30	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 01:30	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/07/19 01:30	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 01:30	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 01:30	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:30	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 01:30	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:30	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 01:30	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/07/19 01:30	17060-07-0	HS
Toluene-d8 (S)	114	%.	75-125		1		12/07/19 01:30	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/07/19 01:30	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-27 **Lab ID: 10501501024** Collected: 12/04/19 12:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00066**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:55	7440-38-2	
Barium, Dissolved	**0.044**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:55	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:55	7440-43-9	
Chromium, Dissolved	**0.0057**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:55	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:55	7440-48-4	
Copper, Dissolved	**0.00059J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:55	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:55	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:55	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:55	7439-96-5	
Nickel, Dissolved	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:55	7440-02-0	
Selenium, Dissolved	**0.0026**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:55	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:55	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:55	7440-28-0	
Vanadium, Dissolved	**0.0024**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:55	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 03:55	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/09/19 23:43	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:43	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:43	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/09/19 23:43	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 23:43	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:43	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/09/19 23:43	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/09/19 23:43	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/09/19 23:43	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/09/19 23:43	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/09/19 23:43	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:43	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/09/19 23:43	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/09/19 23:43	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:43	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/09/19 23:43	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/09/19 23:43	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/09/19 23:43	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/09/19 23:43	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/09/19 23:43	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/09/19 23:43	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/09/19 23:43	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/09/19 23:43	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/09/19 23:43	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/09/19 23:43	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/09/19 23:43	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/09/19 23:43	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/09/19 23:43	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/09/19 23:43	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: MW-27 **Lab ID: 10501501024** Collected: 12/04/19 12:30 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/09/19 23:43	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/09/19 23:43	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/09/19 23:43	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/09/19 23:43	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/09/19 23:43	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/09/19 23:43	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/09/19 23:43	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 23:43	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/09/19 23:43	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/09/19 23:43	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/09/19 23:43	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/09/19 23:43	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/09/19 23:43	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/09/19 23:43	100-42-5	
Tetrachloroethene	**1.4**	ug/L	0.50	0.17	1		12/09/19 23:43	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/09/19 23:43	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/09/19 23:43	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/09/19 23:43	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/09/19 23:43	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/09/19 23:43	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/09/19 23:43	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/09/19 23:43	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/09/19 23:43	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/09/19 23:43	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/09/19 23:43	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/09/19 23:43	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/09/19 23:43	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/09/19 23:43	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/09/19 23:43	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%.	75-136		1		12/09/19 23:43	17060-07-0	
Toluene-d8 (S)	110	%.	75-125		1		12/09/19 23:43	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	75-125		1		12/09/19 23:43	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**39.5**	mg/L	5.0	0.58	5		12/18/19 11:38	16887-00-6	
Sulfate	**39.0**	mg/L	2.0	0.73	2		12/17/19 21:44	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**7.6**	mg/L	0.40	0.21	20		12/17/19 14:24		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: SHOP WELL **Lab ID: 10501501025** Collected: 12/03/19 10:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:54	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:54	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:54	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 01:54	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:54	76-13-1	
1,1-Dichloroethane	**1.8**	ug/L	0.50	0.17	1		12/07/19 01:54	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:54	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 01:54	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 01:54	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 01:54	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 01:54	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:54	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 01:54	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 01:54	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:54	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 01:54	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 01:54	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 01:54	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 01:54	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 01:54	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 01:54	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 01:54	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:54	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 01:54	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 01:54	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 01:54	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 01:54	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:54	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 01:54	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 01:54	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 01:54	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 01:54	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 01:54	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 01:54	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 01:54	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 01:54	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 01:54	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 01:54	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 01:54	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:54	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 01:54	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 01:54	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 01:54	100-42-5	
Tetrachloroethene	**5.8**	ug/L	0.50	0.17	1		12/07/19 01:54	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 01:54	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 01:54	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: SHOP WELL **Lab ID: 10501501025** Collected: 12/03/19 10:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**1.8**	ug/L	0.40	0.15	1		12/07/19 01:54	79-01-6	
Trichlorofluoromethane	**0.68J**	ug/L	1.0	0.23	1		12/07/19 01:54	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 01:54	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 01:54	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 01:54	1330-20-7	
cis-1,2-Dichloroethene	**1.1**	ug/L	0.50	0.15	1		12/07/19 01:54	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 01:54	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 01:54	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 01:54	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 01:54	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 01:54	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 01:54	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/07/19 01:54	17060-07-0	
Toluene-d8 (S)	116	%.	75-125		1		12/07/19 01:54	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/07/19 01:54	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: McILHATTEN SEEP **Lab ID: 10501501026** Collected: 12/03/19 14:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00085**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/11/19 20:55	7440-38-2	
Barium, Dissolved	**0.057**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/11/19 20:55	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/11/19 20:55	7440-43-9	
Chromium, Dissolved	**0.0031**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/11/19 20:55	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/11/19 20:55	7440-48-4	
Copper, Dissolved	**0.00090J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/11/19 20:55	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/11/19 20:55	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/11/19 20:55	7439-92-1	
Manganese, Dissolved	**0.00061**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/11/19 20:55	7439-96-5	
Nickel, Dissolved	**0.00066**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/11/19 20:55	7440-02-0	
Selenium, Dissolved	**0.0017**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/11/19 20:55	7782-49-2	
Silver, Dissolved	**0.00010J**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/11/19 20:55	7440-22-4	
Thallium, Dissolved	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/12/19 13:10	7440-28-0	
Vanadium, Dissolved	**0.0037**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/11/19 20:55	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/11/19 20:55	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 02:18	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:18	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:18	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 02:18	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 02:18	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:18	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 02:18	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 02:18	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 02:18	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 02:18	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 02:18	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:18	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 02:18	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 02:18	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:18	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 02:18	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 02:18	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 02:18	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 02:18	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 02:18	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 02:18	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 02:18	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 02:18	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 02:18	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 02:18	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 02:18	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 02:18	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 02:18	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 02:18	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: McILHATTEN SEEP **Lab ID: 10501501026** Collected: 12/03/19 14:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:18	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 02:18	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 02:18	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 02:18	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 02:18	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 02:18	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 02:18	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 02:18	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:18	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 02:18	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 02:18	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 02:18	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 02:18	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 02:18	100-42-5	
Tetrachloroethene	**0.75**	ug/L	0.50	0.17	1		12/07/19 02:18	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 02:18	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 02:18	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 02:18	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 02:18	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 02:18	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 02:18	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 02:18	1330-20-7	
cis-1,2-Dichloroethene	**0.19J**	ug/L	0.50	0.15	1		12/07/19 02:18	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 02:18	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 02:18	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 02:18	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 02:18	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 02:18	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 02:18	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-136		1		12/07/19 02:18	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/07/19 02:18	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	75-125		1		12/07/19 02:18	460-00-4	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**6.3**	mg/L	0.40	0.21	20		12/17/19 14:25		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: VALLEY VIEW VET WELL **Lab ID: 10501501027** Collected: 12/03/19 14:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic	**0.00068**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:59	7440-38-2	
Barium	**<0.00014**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 03:59	7440-39-3	
Cadmium	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 03:59	7440-43-9	
Chromium	**0.0012**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 03:59	7440-47-3	
Cobalt	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 03:59	7440-48-4	
Copper	**0.0092**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 03:59	7440-50-8	
Iron	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 03:59	7439-89-6	
Lead	**0.00017**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 03:59	7439-92-1	
Manganese	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 03:59	7439-96-5	
Nickel	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 03:59	7440-02-0	
Selenium	**0.00081**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 03:59	7782-49-2	
Silver	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 03:59	7440-22-4	
Thallium	**<0.000047**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 03:59	7440-28-0	
Vanadium	**0.0045**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 03:59	7440-62-2	
Zinc	**0.0093**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 23:31	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 02:42	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:42	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:42	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 02:42	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 02:42	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:42	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 02:42	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 02:42	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 02:42	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 02:42	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 02:42	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:42	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 02:42	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 02:42	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:42	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 02:42	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 02:42	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 02:42	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 02:42	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 02:42	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 02:42	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 02:42	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 02:42	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 02:42	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 02:42	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 02:42	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 02:42	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 02:42	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 02:42	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: VALLEY VIEW VET WELL **Lab ID: 10501501027** Collected: 12/03/19 14:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:42	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 02:42	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 02:42	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 02:42	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 02:42	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 02:42	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 02:42	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 02:42	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 02:42	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 02:42	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 02:42	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 02:42	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 02:42	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 02:42	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 02:42	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 02:42	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 02:42	108-88-3	
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/07/19 02:42	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 02:42	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 02:42	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 02:42	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 02:42	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/07/19 02:42	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 02:42	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 02:42	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 02:42	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 02:42	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 02:42	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 02:42	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/07/19 02:42	17060-07-0	
Toluene-d8 (S)	113	%.	75-125		1		12/07/19 02:42	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/07/19 02:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-1 **Lab ID: 10501501028** Collected: 12/02/19 13:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00050J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:21	7440-38-2	
Barium, Dissolved	**0.098**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 04:21	7440-39-3	
Cadmium, Dissolved	**0.00023**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 04:21	7440-43-9	
Chromium, Dissolved	**0.00027J**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 04:21	7440-47-3	
Cobalt, Dissolved	**0.00066**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 04:21	7440-48-4	
Copper, Dissolved	**0.00076J**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 04:21	7440-50-8	
Iron, Dissolved	**0.056**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 04:21	7439-89-6	
Lead, Dissolved	**0.000058J**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 04:21	7439-92-1	
Manganese, Dissolved	**2.2**	mg/L	0.0050	0.0023	10	12/10/19 05:38	12/13/19 23:35	7439-96-5	
Nickel, Dissolved	**0.0055**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 04:21	7440-02-0	
Selenium, Dissolved	**<0.00014**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:21	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 04:21	7440-22-4	
Thallium, Dissolved	**0.000075J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 04:21	7440-28-0	B
Vanadium, Dissolved	**0.0026**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 04:21	7440-62-2	
Zinc, Dissolved	**0.0028J**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 04:21	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 18:20	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 18:20	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 18:20	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 18:20	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 18:20	76-13-1	
1,1-Dichloroethane	**0.86**	ug/L	0.50	0.17	1		12/06/19 18:20	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 18:20	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 18:20	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 18:20	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 18:20	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 18:20	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 18:20	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 18:20	107-06-2	
1,2-Dichloropropane	**0.27J**	ug/L	4.0	0.16	1		12/06/19 18:20	78-87-5	
1,4-Dichlorobenzene	**0.68**	ug/L	0.50	0.17	1		12/06/19 18:20	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 18:20	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 18:20	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 18:20	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 18:20	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 18:20	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 18:20	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 18:20	107-13-1	
Benzene	**0.50J**	ug/L	0.50	0.10	1		12/06/19 18:20	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 18:20	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 18:20	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 18:20	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 18:20	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 18:20	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 18:20	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-1 **Lab ID: 10501501028** Collected: 12/02/19 13:40 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**0.26J**	ug/L	0.50	0.17	1		12/06/19 18:20	108-90-7	
Chloroethane	**1.3**	ug/L	1.0	0.49	1		12/06/19 18:20	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 18:20	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 18:20	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 18:20	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 18:20	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 18:20	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 18:20	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 18:20	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 18:20	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 18:20	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 18:20	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 18:20	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 18:20	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 18:20	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 18:20	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 18:20	108-88-3	
Trichloroethene	**0.25J**	ug/L	0.40	0.15	1		12/06/19 18:20	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 18:20	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 18:20	108-05-4	
Vinyl chloride	**9.6**	ug/L	0.20	0.092	1		12/06/19 18:20	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 18:20	1330-20-7	
cis-1,2-Dichloroethene	**0.95**	ug/L	0.50	0.15	1		12/06/19 18:20	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 18:20	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 18:20	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 18:20	103-65-1	
trans-1,2-Dichloroethene	**0.14J**	ug/L	0.50	0.12	1		12/06/19 18:20	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 18:20	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 18:20	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-136		1		12/06/19 18:20	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/06/19 18:20	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		12/06/19 18:20	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**44.5**	mg/L	5.0	0.58	5		12/18/19 12:15	16887-00-6	
Sulfate	**26.1**	mg/L	2.0	0.73	2		12/17/19 22:57	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**0.012J**	mg/L	0.020	0.010	1		12/17/19 14:27		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-2 **Lab ID: 10501501029** Collected: 12/03/19 09:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00056**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:25	7440-38-2	
Barium, Dissolved	**0.080**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 04:25	7440-39-3	
Cadmium, Dissolved	**0.000034J**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 04:25	7440-43-9	
Chromium, Dissolved	**0.00054**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 04:25	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 04:25	7440-48-4	
Copper, Dissolved	**0.0031**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 04:25	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 04:25	7439-89-6	
Lead, Dissolved	**0.00012**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 04:25	7439-92-1	
Manganese, Dissolved	**0.073**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 04:25	7439-96-5	
Nickel, Dissolved	**0.0030**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 04:25	7440-02-0	
Selenium, Dissolved	**0.00016J**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:25	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 04:25	7440-22-4	
Thallium, Dissolved	**0.000058J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 04:25	7440-28-0	B
Vanadium, Dissolved	**0.0027**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 04:25	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 04:25	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 03:06	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:06	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:06	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 03:06	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 03:06	76-13-1	
1,1-Dichloroethane	**0.89**	ug/L	0.50	0.17	1		12/07/19 03:06	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 03:06	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 03:06	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 03:06	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 03:06	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 03:06	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:06	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 03:06	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 03:06	78-87-5	
1,4-Dichlorobenzene	**0.24J**	ug/L	0.50	0.17	1		12/07/19 03:06	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 03:06	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 03:06	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 03:06	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 03:06	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 03:06	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 03:06	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 03:06	107-13-1	
Benzene	**0.20J**	ug/L	0.50	0.10	1		12/07/19 03:06	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 03:06	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 03:06	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 03:06	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 03:06	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 03:06	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 03:06	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-2 **Lab ID: 10501501029** Collected: 12/03/19 09:50 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:06	108-90-7	
Chloroethane	**1.3**	ug/L	1.0	0.49	1		12/07/19 03:06	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 03:06	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 03:06	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 03:06	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 03:06	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 03:06	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 03:06	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:06	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 03:06	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 03:06	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 03:06	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 03:06	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 03:06	100-42-5	
Tetrachloroethene	**0.48J**	ug/L	0.50	0.17	1		12/07/19 03:06	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 03:06	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 03:06	108-88-3	
Trichloroethene	**0.30J**	ug/L	0.40	0.15	1		12/07/19 03:06	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 03:06	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 03:06	108-05-4	
Vinyl chloride	**1.8**	ug/L	0.20	0.092	1		12/07/19 03:06	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 03:06	1330-20-7	
cis-1,2-Dichloroethene	**1.6**	ug/L	0.50	0.15	1		12/07/19 03:06	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 03:06	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 03:06	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 03:06	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 03:06	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 03:06	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 03:06	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/07/19 03:06	17060-07-0	
Toluene-d8 (S)	111	%.	75-125		1		12/07/19 03:06	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		12/07/19 03:06	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**38.7**	mg/L	2.0	0.23	2		12/17/19 23:15	16887-00-6	
Sulfate	**25.9**	mg/L	2.0	0.73	2		12/17/19 23:15	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**0.78**	mg/L	0.10	0.052	5		12/17/19 16:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-3 **Lab ID: 10501501030** Collected: 12/03/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 3020A								
Arsenic, Dissolved	**0.00051**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:29	7440-38-2	
Barium, Dissolved	**0.045**	mg/L	0.00030	0.00014	1	12/10/19 05:38	12/13/19 04:29	7440-39-3	
Cadmium, Dissolved	**<0.000030**	mg/L	0.000080	0.000030	1	12/10/19 05:38	12/13/19 04:29	7440-43-9	
Chromium, Dissolved	**0.0045**	mg/L	0.00050	0.00021	1	12/10/19 05:38	12/13/19 04:29	7440-47-3	
Cobalt, Dissolved	**<0.000085**	mg/L	0.00050	0.000085	1	12/10/19 05:38	12/13/19 04:29	7440-48-4	
Copper, Dissolved	**0.016**	mg/L	0.0010	0.00043	1	12/10/19 05:38	12/13/19 04:29	7440-50-8	
Iron, Dissolved	**<0.012**	mg/L	0.050	0.012	1	12/10/19 05:38	12/13/19 04:29	7439-89-6	
Lead, Dissolved	**<0.000046**	mg/L	0.00010	0.000046	1	12/10/19 05:38	12/13/19 04:29	7439-92-1	
Manganese, Dissolved	**<0.00023**	mg/L	0.00050	0.00023	1	12/10/19 05:38	12/13/19 04:29	7439-96-5	
Nickel, Dissolved	**<0.00015**	mg/L	0.00050	0.00015	1	12/10/19 05:38	12/13/19 04:29	7440-02-0	
Selenium, Dissolved	**0.0013**	mg/L	0.00050	0.00014	1	12/10/19 05:38	12/13/19 04:29	7782-49-2	
Silver, Dissolved	**<0.000077**	mg/L	0.00050	0.000077	1	12/10/19 05:38	12/13/19 04:29	7440-22-4	
Thallium, Dissolved	**0.000048J**	mg/L	0.00010	0.000047	1	12/10/19 05:38	12/13/19 04:29	7440-28-0	B
Vanadium, Dissolved	**0.0024**	mg/L	0.0010	0.00027	1	12/10/19 05:38	12/13/19 04:29	7440-62-2	
Zinc, Dissolved	**<0.0024**	mg/L	0.0050	0.0024	1	12/10/19 05:38	12/13/19 04:29	7440-66-6	
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/07/19 03:30	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:30	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:30	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/07/19 03:30	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 03:30	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:30	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/07/19 03:30	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/07/19 03:30	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/07/19 03:30	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/07/19 03:30	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/07/19 03:30	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:30	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/07/19 03:30	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/07/19 03:30	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:30	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/07/19 03:30	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/07/19 03:30	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/07/19 03:30	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/07/19 03:30	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/07/19 03:30	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/07/19 03:30	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/07/19 03:30	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 03:30	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/07/19 03:30	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/07/19 03:30	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/07/19 03:30	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/07/19 03:30	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/07/19 03:30	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/07/19 03:30	56-23-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: DUP-3 **Lab ID: 10501501030** Collected: 12/03/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/07/19 03:30	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/07/19 03:30	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/07/19 03:30	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/07/19 03:30	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/07/19 03:30	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/07/19 03:30	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/07/19 03:30	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 03:30	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/07/19 03:30	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/07/19 03:30	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/07/19 03:30	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/07/19 03:30	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/07/19 03:30	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/07/19 03:30	100-42-5	
Tetrachloroethene	**2.5**	ug/L	0.50	0.17	1		12/07/19 03:30	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/07/19 03:30	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/07/19 03:30	108-88-3	
Trichloroethene	**0.49**	ug/L	0.40	0.15	1		12/07/19 03:30	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/07/19 03:30	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/07/19 03:30	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/07/19 03:30	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/07/19 03:30	1330-20-7	
cis-1,2-Dichloroethene	**1.4**	ug/L	0.50	0.15	1		12/07/19 03:30	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/07/19 03:30	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/07/19 03:30	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/07/19 03:30	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/07/19 03:30	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/07/19 03:30	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/07/19 03:30	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-136		1		12/07/19 03:30	17060-07-0	
Toluene-d8 (S)	114	%.	75-125		1		12/07/19 03:30	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		12/07/19 03:30	460-00-4	
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**38.8**	mg/L	2.0	0.23	2		12/17/19 23:33	16887-00-6	
Sulfate	**24.0**	mg/L	2.0	0.73	2		12/17/19 23:33	14808-79-8	
353.2 Nitrate + Nitrite pres.	Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	**4.8**	mg/L	0.40	0.21	20		12/17/19 16:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: Trip Blank-1 **Lab ID: 10501501031** Collected: 12/02/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:33	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:33	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:33	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 13:33	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:33	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:33	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:33	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 13:33	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:33	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 13:33	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 13:33	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:33	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:33	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 13:33	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:33	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 13:33	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 13:33	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 13:33	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 13:33	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 13:33	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 13:33	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 13:33	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:33	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 13:33	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 13:33	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 13:33	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 13:33	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:33	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 13:33	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:33	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 13:33	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 13:33	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 13:33	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 13:33	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 13:33	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 13:33	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:33	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:33	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 13:33	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:33	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:33	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 13:33	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:33	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:33	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 13:33	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 13:33	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: Trip Blank-1 **Lab ID: 10501501031** Collected: 12/02/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 13:33	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:33	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 13:33	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 13:33	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 13:33	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 13:33	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 13:33	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 13:33	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:33	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 13:33	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:33	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 13:33	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-136		1		12/06/19 13:33	17060-07-0	
Toluene-d8 (S)	116	%.	75-125		1		12/06/19 13:33	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		12/06/19 13:33	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
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ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: Trip Blank-2 **Lab ID: 10501501032** Collected: 12/02/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
1,1,1,2-Tetrachloroethane	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:09	630-20-6	
1,1,1-Trichloroethane	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:09	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:09	79-34-5	
1,1,2-Trichloroethane	**<0.18**	ug/L	0.50	0.18	1		12/06/19 13:09	79-00-5	
1,1,2-Trichlorotrifluoroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:09	76-13-1	
1,1-Dichloroethane	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:09	75-34-3	
1,1-Dichloroethene	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:09	75-35-4	
1,2,3-Trichloropropane	**<0.26**	ug/L	4.0	0.26	1		12/06/19 13:09	96-18-4	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.50	0.20	1		12/06/19 13:09	95-63-6	
1,2-Dibromo-3-chloropropane	**<1.7**	ug/L	10.0	1.7	1		12/06/19 13:09	96-12-8	
1,2-Dibromoethane (EDB)	**<0.24**	ug/L	0.50	0.24	1		12/06/19 13:09	106-93-4	
1,2-Dichlorobenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:09	95-50-1	
1,2-Dichloroethane	**<0.22**	ug/L	1.0	0.22	1		12/06/19 13:09	107-06-2	
1,2-Dichloropropane	**<0.16**	ug/L	4.0	0.16	1		12/06/19 13:09	78-87-5	
1,4-Dichlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:09	106-46-7	
1,4-Dioxane (p-Dioxane)	**<54.6**	ug/L	200	54.6	1		12/06/19 13:09	123-91-1	
2-Butanone (MEK)	**<0.99**	ug/L	5.0	0.99	1		12/06/19 13:09	78-93-3	
2-Hexanone	**<0.88**	ug/L	5.0	0.88	1		12/06/19 13:09	591-78-6	
2-Propanol	**<29.6**	ug/L	100	29.6	1		12/06/19 13:09	67-63-0	
4-Methyl-2-pentanone (MIBK)	**<0.42**	ug/L	5.0	0.42	1		12/06/19 13:09	108-10-1	
Acetone	**<9.2**	ug/L	20.0	9.2	1		12/06/19 13:09	67-64-1	
Acrylonitrile	**<0.91**	ug/L	10.0	0.91	1		12/06/19 13:09	107-13-1	
Benzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:09	71-43-2	
Bromochloromethane	**<0.27**	ug/L	1.0	0.27	1		12/06/19 13:09	74-97-5	
Bromodichloromethane	**<0.22**	ug/L	0.50	0.22	1		12/06/19 13:09	75-27-4	
Bromoform	**<0.80**	ug/L	4.0	0.80	1		12/06/19 13:09	75-25-2	
Bromomethane	**<1.8**	ug/L	4.0	1.8	1		12/06/19 13:09	74-83-9	
Carbon disulfide	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:09	75-15-0	
Carbon tetrachloride	**<0.19**	ug/L	0.50	0.19	1		12/06/19 13:09	56-23-5	
Chlorobenzene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:09	108-90-7	
Chloroethane	**<0.49**	ug/L	1.0	0.49	1		12/06/19 13:09	75-00-3	
Chloroform	**<0.45**	ug/L	4.0	0.45	1		12/06/19 13:09	67-66-3	
Chloromethane	**<0.48**	ug/L	4.0	0.48	1		12/06/19 13:09	74-87-3	
Cyclohexane	**<0.54**	ug/L	5.0	0.54	1		12/06/19 13:09	110-82-7	
Dibromochloromethane	**<0.12**	ug/L	1.0	0.12	1		12/06/19 13:09	124-48-1	
Dibromomethane	**<0.16**	ug/L	1.0	0.16	1		12/06/19 13:09	74-95-3	
Dichlorodifluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:09	75-71-8	
Ethylbenzene	**<0.14**	ug/L	0.50	0.14	1		12/06/19 13:09	100-41-4	
Iodomethane	**<0.82**	ug/L	4.0	0.82	1		12/06/19 13:09	74-88-4	
Isopropylbenzene (Cumene)	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:09	98-82-8	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.50	0.16	1		12/06/19 13:09	1634-04-4	
Methylene Chloride	**<0.98**	ug/L	4.0	0.98	1		12/06/19 13:09	75-09-2	
Styrene	**<0.19**	ug/L	1.0	0.19	1		12/06/19 13:09	100-42-5	
Tetrachloroethene	**<0.17**	ug/L	0.50	0.17	1		12/06/19 13:09	127-18-4	
Tetrahydrofuran	**<2.2**	ug/L	10.0	2.2	1		12/06/19 13:09	109-99-9	
Toluene	**<0.083**	ug/L	0.50	0.083	1		12/06/19 13:09	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Sample: Trip Blank-2 **Lab ID: 10501501032** Collected: 12/02/19 00:00 Received: 12/05/19 08:45 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Low Level	Analytical Method: EPA 8260B								
Trichloroethene	**<0.15**	ug/L	0.40	0.15	1		12/06/19 13:09	79-01-6	
Trichlorofluoromethane	**<0.23**	ug/L	1.0	0.23	1		12/06/19 13:09	75-69-4	
Vinyl acetate	**<1.1**	ug/L	10.0	1.1	1		12/06/19 13:09	108-05-4	
Vinyl chloride	**<0.092**	ug/L	0.20	0.092	1		12/06/19 13:09	75-01-4	
Xylene (Total)	**<0.31**	ug/L	1.5	0.31	1		12/06/19 13:09	1330-20-7	
cis-1,2-Dichloroethene	**<0.15**	ug/L	0.50	0.15	1		12/06/19 13:09	156-59-2	
cis-1,3-Dichloropropene	**<0.20**	ug/L	1.0	0.20	1		12/06/19 13:09	10061-01-5	
n-Hexane	**<4.6**	ug/L	10.0	4.6	1		12/06/19 13:09	110-54-3	
n-Propylbenzene	**<0.10**	ug/L	0.50	0.10	1		12/06/19 13:09	103-65-1	
trans-1,2-Dichloroethene	**<0.12**	ug/L	0.50	0.12	1		12/06/19 13:09	156-60-5	
trans-1,3-Dichloropropene	**<0.18**	ug/L	1.0	0.18	1		12/06/19 13:09	10061-02-6	
trans-1,4-Dichloro-2-butene	**<2.0**	ug/L	10.0	2.0	1		12/06/19 13:09	110-57-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-136		1		12/06/19 13:09	17060-07-0	
Toluene-d8 (S)	112	%.	75-125		1		12/06/19 13:09	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		12/06/19 13:09	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 648448
QC Batch Method: EPA 3020A
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Associated Lab Samples: 10501501027

METHOD BLANK: 3488466
Matrix: Water
Associated Lab Samples: 10501501027

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	<0.00014	0.00050	0.00014	12/13/19 02:30	
Barium	mg/L	<0.00014	0.00030	0.00014	12/13/19 02:30	
Cadmium	mg/L	<0.000030	0.000080	0.000030	12/13/19 02:30	
Chromium	mg/L	<0.00021	0.00050	0.00021	12/13/19 02:30	
Cobalt	mg/L	<0.000085	0.00050	0.000085	12/13/19 02:30	
Copper	mg/L	<0.00043	0.0010	0.00043	12/13/19 02:30	
Iron	mg/L	<0.012	0.050	0.012	12/13/19 02:30	
Lead	mg/L	<0.000046	0.00010	0.000046	12/13/19 02:30	
Manganese	mg/L	<0.00023	0.00050	0.00023	12/13/19 02:30	
Nickel	mg/L	<0.00015	0.00050	0.00015	12/13/19 02:30	
Selenium	mg/L	<0.00014	0.00050	0.00014	12/13/19 02:30	
Silver	mg/L	<0.000077	0.00050	0.000077	12/13/19 02:30	
Thallium	mg/L	0.000056J	0.00010	0.000047	12/13/19 02:30	
Vanadium	mg/L	<0.00027	0.0010	0.00027	12/13/19 02:30	
Zinc	mg/L	<0.0024	0.0050	0.0024	12/13/19 22:30	

LABORATORY CONTROL SAMPLE: 3488467

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.096	96	80-120	
Barium	mg/L	0.1	0.095	95	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Copper	mg/L	0.1	0.098	98	80-120	
Iron	mg/L	2	2.0	100	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Manganese	mg/L	0.1	0.10	101	80-120	
Nickel	mg/L	0.1	0.10	100	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Silver	mg/L	0.05	0.050	100	80-120	
Thallium	mg/L	0.1	0.096	96	80-120	
Vanadium	mg/L	0.1	0.099	99	80-120	
Zinc	mg/L	0.1	0.10	104	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3488468 3488469

Parameter	Units	10505394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L		0.1	0.1	0.096	0.098	95	98	75-125	2	20	
Barium	mg/L		0.1	0.1	0.16	0.16	96	97	75-125	1	20	
Cadmium	mg/L		0.1	0.1	0.092	0.095	92	95	75-125	3	20	
Chromium	mg/L		0.1	0.1	0.10	0.10	99	100	75-125	1	20	
Cobalt	mg/L		0.1	0.1	0.099	0.10	99	103	75-125	4	20	
Copper	mg/L		0.1	0.1	0.094	0.098	94	97	75-125	4	20	
Iron	mg/L		2	2	2.0	2.0	98	99	75-125	1	20	
Lead	mg/L		0.1	0.1	0.095	0.098	95	98	75-125	3	20	
Manganese	mg/L		0.1	0.1	0.098	0.10	98	100	75-125	2	20	
Nickel	mg/L		0.1	0.1	0.097	0.10	96	99	75-125	3	20	
Selenium	mg/L		0.1	0.1	0.096	0.098	96	98	75-125	3	20	
Silver	mg/L		0.05	0.05	0.047	0.048	94	97	75-125	2	20	
Thallium	mg/L		0.1	0.1	0.092	0.095	92	95	75-125	4	20	
Vanadium	mg/L		0.1	0.1	0.10	0.10	98	101	75-125	2	20	
Zinc	mg/L		0.1	0.1	0.10	0.10	101	101	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 648998
QC Batch Method: EPA 3020A
Analysis Method: EPA 6020
Analysis Description: 6020 MET Dissolved
Associated Lab Samples: 10501501026

METHOD BLANK: 3491110
Matrix: Water
Associated Lab Samples: 10501501026

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	mg/L	<0.00014	0.00050	0.00014	12/11/19 20:46	
Barium, Dissolved	mg/L	<0.00014	0.00030	0.00014	12/11/19 20:46	
Cadmium, Dissolved	mg/L	<0.000030	0.000080	0.000030	12/11/19 20:46	
Chromium, Dissolved	mg/L	<0.00021	0.00050	0.00021	12/11/19 20:46	
Cobalt, Dissolved	mg/L	<0.000085	0.00050	0.000085	12/11/19 20:46	
Copper, Dissolved	mg/L	<0.00043	0.0010	0.00043	12/11/19 20:46	
Iron, Dissolved	mg/L	<0.012	0.050	0.012	12/11/19 20:46	
Lead, Dissolved	mg/L	<0.000046	0.00010	0.000046	12/11/19 20:46	
Manganese, Dissolved	mg/L	<0.00023	0.00050	0.00023	12/11/19 20:46	
Nickel, Dissolved	mg/L	<0.00015	0.00050	0.00015	12/11/19 20:46	
Selenium, Dissolved	mg/L	<0.00014	0.00050	0.00014	12/11/19 20:46	
Silver, Dissolved	mg/L	<0.000077	0.00050	0.000077	12/11/19 20:46	
Thallium, Dissolved	mg/L	<0.000047	0.00010	0.000047	12/11/19 20:46	
Vanadium, Dissolved	mg/L	<0.00027	0.0010	0.00027	12/11/19 20:46	
Zinc, Dissolved	mg/L	<0.0024	0.0050	0.0024	12/11/19 20:46	

LABORATORY CONTROL SAMPLE: 3491111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	0.1	0.097	97	80-120	
Barium, Dissolved	mg/L	0.1	0.098	98	80-120	
Cadmium, Dissolved	mg/L	0.1	0.098	98	80-120	
Chromium, Dissolved	mg/L	0.1	0.10	102	80-120	
Cobalt, Dissolved	mg/L	0.1	0.10	102	80-120	
Copper, Dissolved	mg/L	0.1	0.10	101	80-120	
Iron, Dissolved	mg/L	2	2.0	101	80-120	
Lead, Dissolved	mg/L	0.1	0.10	101	80-120	
Manganese, Dissolved	mg/L	0.1	0.098	98	80-120	
Nickel, Dissolved	mg/L	0.1	0.10	102	80-120	
Selenium, Dissolved	mg/L	0.1	0.10	100	80-120	
Silver, Dissolved	mg/L	0.05	0.051	103	80-120	
Thallium, Dissolved	mg/L	0.1	0.095	95	80-120	
Vanadium, Dissolved	mg/L	0.1	0.10	100	80-120	
Zinc, Dissolved	mg/L	0.1	0.098	98	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3491112 3491113

Parameter	Units	10501501026 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	mg/L	0.00085	0.1	0.1	0.097	0.10	96	99	75-125	3	20	
Barium, Dissolved	mg/L	0.057	0.1	0.1	0.16	0.16	99	104	75-125	3	20	
Cadmium, Dissolved	mg/L	<0.000030	0.1	0.1	0.095	0.097	95	97	75-125	2	20	
Chromium, Dissolved	mg/L	0.0031	0.1	0.1	0.10	0.10	99	102	75-125	3	20	
Cobalt, Dissolved	mg/L	<0.000085	0.1	0.1	0.10	0.10	100	103	75-125	3	20	
Copper, Dissolved	mg/L	0.00090J	0.1	0.1	0.095	0.099	94	98	75-125	4	20	
Iron, Dissolved	mg/L	<0.012	2	2	2.0	2.0	98	101	75-125	3	20	
Lead, Dissolved	mg/L	<0.000046	0.1	0.1	0.096	0.099	96	99	75-125	3	20	
Manganese, Dissolved	mg/L	0.00061	0.1	0.1	0.097	0.099	96	98	75-125	2	20	
Nickel, Dissolved	mg/L	0.00066	0.1	0.1	0.098	0.10	97	100	75-125	2	20	
Selenium, Dissolved	mg/L	0.0017	0.1	0.1	0.098	0.10	97	98	75-125	2	20	
Silver, Dissolved	mg/L	0.00010J	0.05	0.05	0.049	0.050	97	99	75-125	2	20	
Thallium, Dissolved	mg/L	<0.000047	0.1	0.1	0.092	0.095	92	95	75-125	3	20	
Vanadium, Dissolved	mg/L	0.0037	0.1	0.1	0.10	0.11	99	102	75-125	3	20	
Zinc, Dissolved	mg/L	<0.0024	0.1	0.1	0.094	0.096	93	94	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 654638 Analysis Method: EPA 6020
QC Batch Method: EPA 3020A Analysis Description: 6020 MET Dissolved
Associated Lab Samples: 10501501002, 10501501003, 10501501004, 10501501005, 10501501007, 10501501008, 10501501011, 10501501012, 10501501013, 10501501014, 10501501015, 10501501017, 10501501024, 10501501028, 10501501029, 10501501030

METHOD BLANK: 3519074 Matrix: Water
Associated Lab Samples: 10501501002, 10501501003, 10501501004, 10501501005, 10501501007, 10501501008, 10501501011, 10501501012, 10501501013, 10501501014, 10501501015, 10501501017, 10501501024, 10501501028, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	mg/L	<0.00014	0.00050	0.00014	12/13/19 02:30	
Barium, Dissolved	mg/L	<0.00014	0.00030	0.00014	12/13/19 02:30	
Cadmium, Dissolved	mg/L	<0.000030	0.000080	0.000030	12/13/19 02:30	
Chromium, Dissolved	mg/L	<0.00021	0.00050	0.00021	12/13/19 02:30	
Cobalt, Dissolved	mg/L	<0.000085	0.00050	0.000085	12/13/19 02:30	
Copper, Dissolved	mg/L	<0.00043	0.0010	0.00043	12/13/19 02:30	
Iron, Dissolved	mg/L	<0.012	0.050	0.012	12/13/19 02:30	
Lead, Dissolved	mg/L	<0.000046	0.00010	0.000046	12/13/19 02:30	
Manganese, Dissolved	mg/L	<0.00023	0.00050	0.00023	12/13/19 02:30	
Nickel, Dissolved	mg/L	<0.00015	0.00050	0.00015	12/13/19 02:30	
Selenium, Dissolved	mg/L	<0.00014	0.00050	0.00014	12/13/19 02:30	
Silver, Dissolved	mg/L	<0.000077	0.00050	0.000077	12/13/19 02:30	
Thallium, Dissolved	mg/L	0.000056J	0.00010	0.000047	12/13/19 02:30	
Vanadium, Dissolved	mg/L	<0.00027	0.0010	0.00027	12/13/19 02:30	
Zinc, Dissolved	mg/L	<0.0024	0.0050	0.0024	12/13/19 22:30	

LABORATORY CONTROL SAMPLE: 3519075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	0.1	0.096	96	80-120	
Barium, Dissolved	mg/L	0.1	0.095	95	80-120	
Cadmium, Dissolved	mg/L	0.1	0.097	97	80-120	
Chromium, Dissolved	mg/L	0.1	0.10	100	80-120	
Cobalt, Dissolved	mg/L	0.1	0.10	100	80-120	
Copper, Dissolved	mg/L	0.1	0.098	98	80-120	
Iron, Dissolved	mg/L	2	2.0	100	80-120	
Lead, Dissolved	mg/L	0.1	0.10	101	80-120	
Manganese, Dissolved	mg/L	0.1	0.10	101	80-120	
Nickel, Dissolved	mg/L	0.1	0.10	100	80-120	
Selenium, Dissolved	mg/L	0.1	0.10	101	80-120	
Silver, Dissolved	mg/L	0.05	0.050	100	80-120	
Thallium, Dissolved	mg/L	0.1	0.096	96	80-120	
Vanadium, Dissolved	mg/L	0.1	0.099	99	80-120	
Zinc, Dissolved	mg/L	0.1	0.10	104	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3519076 3519077

Parameter	Units	10501501003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	mg/L	0.00050J	0.1	0.1	0.096	0.098	95	98	75-125	2	20	
Barium, Dissolved	mg/L	0.066	0.1	0.1	0.16	0.16	96	97	75-125	1	20	
Cadmium, Dissolved	mg/L	<0.000030	0.1	0.1	0.092	0.095	92	95	75-125	3	20	
Chromium, Dissolved	mg/L	0.0013	0.1	0.1	0.10	0.10	99	100	75-125	1	20	
Cobalt, Dissolved	mg/L	<0.000085	0.1	0.1	0.099	0.10	99	103	75-125	4	20	
Copper, Dissolved	mg/L	0.00053J	0.1	0.1	0.094	0.098	94	97	75-125	4	20	
Iron, Dissolved	mg/L	<0.012	2	2	2.0	2.0	98	99	75-125	1	20	
Lead, Dissolved	mg/L	<0.000046	0.1	0.1	0.095	0.098	95	98	75-125	3	20	
Manganese, Dissolved	mg/L	<0.00023	0.1	0.1	0.098	0.10	98	100	75-125	2	20	
Nickel, Dissolved	mg/L	0.00081	0.1	0.1	0.097	0.10	96	99	75-125	3	20	
Selenium, Dissolved	mg/L	<0.00014	0.1	0.1	0.096	0.098	96	98	75-125	3	20	
Silver, Dissolved	mg/L	<0.000077	0.05	0.05	0.047	0.048	94	97	75-125	2	20	
Thallium, Dissolved	mg/L	<0.000047	0.1	0.1	0.092	0.095	92	95	75-125	4	20	
Vanadium, Dissolved	mg/L	0.0028	0.1	0.1	0.10	0.10	98	101	75-125	2	20	
Zinc, Dissolved	mg/L	0.0027J	0.1	0.1	0.10	0.10	101	101	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 648523 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV LL Water
Associated Lab Samples: 10501501001, 10501501003, 10501501004, 10501501006, 10501501007, 10501501008, 10501501010, 10501501011, 10501501012, 10501501013, 10501501014, 10501501028, 10501501031, 10501501032

METHOD BLANK: 3488671 Matrix: Water
Associated Lab Samples: 10501501001, 10501501003, 10501501004, 10501501006, 10501501007, 10501501008, 10501501010, 10501501011, 10501501012, 10501501013, 10501501014, 10501501028, 10501501031, 10501501032

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.20	0.50	0.20	12/06/19 09:34	
1,1,1-Trichloroethane	ug/L	<0.14	0.50	0.14	12/06/19 09:34	
1,1,2,2-Tetrachloroethane	ug/L	<0.17	0.50	0.17	12/06/19 09:34	
1,1,2-Trichloroethane	ug/L	<0.18	0.50	0.18	12/06/19 09:34	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.22	1.0	0.22	12/06/19 09:34	
1,1-Dichloroethane	ug/L	<0.17	0.50	0.17	12/06/19 09:34	
1,1-Dichloroethene	ug/L	<0.16	0.50	0.16	12/06/19 09:34	
1,2,3-Trichloropropane	ug/L	<0.26	4.0	0.26	12/06/19 09:34	
1,2,4-Trimethylbenzene	ug/L	<0.20	0.50	0.20	12/06/19 09:34	
1,2-Dibromo-3-chloropropane	ug/L	<1.7	10.0	1.7	12/06/19 09:34	
1,2-Dibromoethane (EDB)	ug/L	<0.24	0.50	0.24	12/06/19 09:34	
1,2-Dichlorobenzene	ug/L	<0.14	0.50	0.14	12/06/19 09:34	
1,2-Dichloroethane	ug/L	<0.22	1.0	0.22	12/06/19 09:34	
1,2-Dichloropropane	ug/L	<0.16	4.0	0.16	12/06/19 09:34	
1,4-Dichlorobenzene	ug/L	<0.17	0.50	0.17	12/06/19 09:34	
1,4-Dioxane (p-Dioxane)	ug/L	<54.6	200	54.6	12/06/19 09:34	
2-Butanone (MEK)	ug/L	<0.99	5.0	0.99	12/06/19 09:34	
2-Hexanone	ug/L	<0.88	5.0	0.88	12/06/19 09:34	
2-Propanol	ug/L	<29.6	100	29.6	12/06/19 09:34	
4-Methyl-2-pentanone (MIBK)	ug/L	<0.42	5.0	0.42	12/06/19 09:34	
Acetone	ug/L	<9.2	20.0	9.2	12/06/19 09:34	
Acrylonitrile	ug/L	<0.91	10.0	0.91	12/06/19 09:34	
Benzene	ug/L	<0.10	0.50	0.10	12/06/19 09:34	
Bromochloromethane	ug/L	<0.27	1.0	0.27	12/06/19 09:34	
Bromodichloromethane	ug/L	<0.22	0.50	0.22	12/06/19 09:34	
Bromoform	ug/L	<0.80	4.0	0.80	12/06/19 09:34	
Bromomethane	ug/L	<1.8	4.0	1.8	12/06/19 09:34	
Carbon disulfide	ug/L	<0.19	1.0	0.19	12/06/19 09:34	
Carbon tetrachloride	ug/L	<0.19	0.50	0.19	12/06/19 09:34	
Chlorobenzene	ug/L	<0.17	0.50	0.17	12/06/19 09:34	
Chloroethane	ug/L	<0.49	1.0	0.49	12/06/19 09:34	
Chloroform	ug/L	<0.45	4.0	0.45	12/06/19 09:34	
Chloromethane	ug/L	<0.48	4.0	0.48	12/06/19 09:34	
cis-1,2-Dichloroethene	ug/L	<0.15	0.50	0.15	12/06/19 09:34	
cis-1,3-Dichloropropene	ug/L	<0.20	1.0	0.20	12/06/19 09:34	
Cyclohexane	ug/L	<0.54	5.0	0.54	12/06/19 09:34	
Dibromochloromethane	ug/L	<0.12	1.0	0.12	12/06/19 09:34	
Dibromomethane	ug/L	<0.16	1.0	0.16	12/06/19 09:34	
Dichlorodifluoromethane	ug/L	<0.23	1.0	0.23	12/06/19 09:34	
Ethylbenzene	ug/L	<0.14	0.50	0.14	12/06/19 09:34	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

METHOD BLANK: 3488671 Matrix: Water

Associated Lab Samples: 10501501001, 10501501003, 10501501004, 10501501006, 10501501007, 10501501008, 10501501010, 10501501011, 10501501012, 10501501013, 10501501014, 10501501028, 10501501031, 10501501032

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iodomethane	ug/L	<0.82	4.0	0.82	12/06/19 09:34	
Isopropylbenzene (Cumene)	ug/L	<0.18	1.0	0.18	12/06/19 09:34	
Methyl-tert-butyl ether	ug/L	<0.16	0.50	0.16	12/06/19 09:34	
Methylene Chloride	ug/L	<0.98	4.0	0.98	12/06/19 09:34	
n-Hexane	ug/L	<4.6	10.0	4.6	12/06/19 09:34	
n-Propylbenzene	ug/L	<0.10	0.50	0.10	12/06/19 09:34	
Styrene	ug/L	<0.19	1.0	0.19	12/06/19 09:34	
Tetrachloroethene	ug/L	<0.17	0.50	0.17	12/06/19 09:34	
Tetrahydrofuran	ug/L	<2.2	10.0	2.2	12/06/19 09:34	
Toluene	ug/L	<0.083	0.50	0.083	12/06/19 09:34	
trans-1,2-Dichloroethene	ug/L	<0.12	0.50	0.12	12/06/19 09:34	
trans-1,3-Dichloropropene	ug/L	<0.18	1.0	0.18	12/06/19 09:34	
trans-1,4-Dichloro-2-butene	ug/L	<2.0	10.0	2.0	12/06/19 09:34	
Trichloroethene	ug/L	<0.15	0.40	0.15	12/06/19 09:34	
Trichlorofluoromethane	ug/L	<0.23	1.0	0.23	12/06/19 09:34	
Vinyl acetate	ug/L	<1.1	10.0	1.1	12/06/19 09:34	
Vinyl chloride	ug/L	<0.092	0.20	0.092	12/06/19 09:34	
Xylene (Total)	ug/L	<0.31	1.5	0.31	12/06/19 09:34	
1,2-Dichloroethane-d4 (S)	%.	107	75-136		12/06/19 09:34	
4-Bromofluorobenzene (S)	%.	101	75-125		12/06/19 09:34	
Toluene-d8 (S)	%.	113	75-125		12/06/19 09:34	

LABORATORY CONTROL SAMPLE: 3488672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	10	10	100	68-141	
1,1,1-Trichloroethane	ug/L	10	10.1	101	75-129	
1,1,2,2-Tetrachloroethane	ug/L	10	10.6	106	73-125	
1,1,2-Trichloroethane	ug/L	10	10.9	109	74-131	
1,1,2-Trichlorotrifluoroethane	ug/L	10	10.9	109	69-132	
1,1-Dichloroethane	ug/L	10	9.8	98	73-125	
1,1-Dichloroethene	ug/L	10	10.1	101	71-126	
1,2,3-Trichloropropane	ug/L	10	10.8	108	75-126	
1,2,4-Trimethylbenzene	ug/L	10	11.6	116	72-134	
1,2-Dibromo-3-chloropropane	ug/L	25	26.6	106	60-135	
1,2-Dibromoethane (EDB)	ug/L	10	10.5	105	75-129	
1,2-Dichlorobenzene	ug/L	10	11.0	110	75-129	
1,2-Dichloroethane	ug/L	10	9.6	96	75-125	
1,2-Dichloropropane	ug/L	10	10.0	100	75-125	
1,4-Dichlorobenzene	ug/L	10	11.0	110	75-125	
1,4-Dioxane (p-Dioxane)	ug/L	200	207	104	72-129	
2-Butanone (MEK)	ug/L	50	46.4	93	59-144	
2-Hexanone	ug/L	50	53.2	106	73-134	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

LABORATORY CONTROL SAMPLE: 3488672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Propanol	ug/L	100	109	109	68-125	
4-Methyl-2-pentanone (MIBK)	ug/L	50	54.1	108	62-141	
Acetone	ug/L	50	51.6	103	60-137	
Acrylonitrile	ug/L	100	94.7	95	75-129	
Benzene	ug/L	10	9.8	98	73-125	
Bromochloromethane	ug/L	10	9.7	97	75-135	
Bromodichloromethane	ug/L	10	9.8	98	75-125	
Bromoform	ug/L	10	10.2	102	67-136	
Bromomethane	ug/L	10	10.0	100	30-150	
Carbon disulfide	ug/L	10	9.9	99	47-137	
Carbon tetrachloride	ug/L	10	10.9	109	75-125	
Chlorobenzene	ug/L	10	10.3	103	75-125	
Chloroethane	ug/L	10	8.5	85	63-136	
Chloroform	ug/L	10	10.0	100	73-128	
Chloromethane	ug/L	10	10.5	105	55-130	
cis-1,2-Dichloroethene	ug/L	10	9.6	96	75-125	
cis-1,3-Dichloropropene	ug/L	10	11.6	116	74-125	
Cyclohexane	ug/L	50	51.0	102	67-125	
Dibromochloromethane	ug/L	10	9.6	96	75-125	
Dibromomethane	ug/L	10	9.3	93	75-125	
Dichlorodifluoromethane	ug/L	10	11.6	116	63-132	
Ethylbenzene	ug/L	10	10.5	105	75-125	
Iodomethane	ug/L	10	8.3	83	72-125	
Isopropylbenzene (Cumene)	ug/L	10	10.6	106	75-125	
Methyl-tert-butyl ether	ug/L	10	8.5	85	75-125	
Methylene Chloride	ug/L	10	10.6	106	70-125	
n-Hexane	ug/L	25	27.1	108	51-150	
n-Propylbenzene	ug/L	10	10.9	109	73-127	
Styrene	ug/L	10	10.3	103	75-125	
Tetrachloroethene	ug/L	10	11.0	110	74-125	
Tetrahydrofuran	ug/L	100	94.8	95	64-138	
Toluene	ug/L	10	10.7	107	74-125	
trans-1,2-Dichloroethene	ug/L	10	10.3	103	68-128	
trans-1,3-Dichloropropene	ug/L	10	10.3	103	75-125	
trans-1,4-Dichloro-2-butene	ug/L	25	23.1	93	60-127	
Trichloroethene	ug/L	10	10.0	100	75-127	
Trichlorofluoromethane	ug/L	10	11.3	113	72-133	
Vinyl acetate	ug/L	10	9.2J	92	61-129	
Vinyl chloride	ug/L	10	11.1	111	75-128	
Xylene (Total)	ug/L	30	33.0	110	75-125	
1,2-Dichloroethane-d4 (S)	%.			110	75-136	
4-Bromofluorobenzene (S)	%.			97	75-125	
Toluene-d8 (S)	%.			107	75-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3488948 3488949

Parameter	Units	10501579001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	100	100	98.7	102	99	102	75-140	3	30	
1,1,1-Trichloroethane	ug/L	ND	100	100	96.4	92.0	96	92	74-136	5	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	100	100	104	105	104	105	66-134	1	30	
1,1,2-Trichloroethane	ug/L	ND	100	100	108	101	108	101	75-126	7	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	100	100	113	114	113	114	65-146	1	30	
1,1-Dichloroethane	ug/L	ND	100	100	95.3	93.9	95	94	68-132	2	30	
1,1-Dichloroethene	ug/L	ND	100	100	99.1	101	99	101	66-139	2	30	
1,2,3-Trichloropropane	ug/L	ND	100	100	104	109	104	109	69-128	5	30	
1,2,4-Trimethylbenzene	ug/L	ND	100	100	113	118	113	118	71-133	5	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	250	250	253	253	101	101	54-138	0	30	
1,2-Dibromoethane (EDB)	ug/L	ND	100	100	109	102	109	102	68-125	7	30	
1,2-Dichlorobenzene	ug/L	ND	100	100	106	108	106	108	74-136	2	30	
1,2-Dichloroethane	ug/L	ND	100	100	93.3	90.7	93	91	68-125	3	30	
1,2-Dichloropropane	ug/L	ND	100	100	95.6	93.5	96	94	67-125	2	30	
1,4-Dichlorobenzene	ug/L	ND	100	100	108	106	108	106	74-126	2	30	
1,4-Dioxane (p-Dioxane)	ug/L	ND	2000	2000	2180	1890J	109	94	68-125		30	
2-Butanone (MEK)	ug/L	85.8	500	500	494	481	82	79	54-144	3	30	
2-Hexanone	ug/L	ND	500	500	499	480	100	96	58-137	4	30	
2-Propanol	ug/L	ND	1000	1000	1080	1220	108	122	40-150	13	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	500	500	564	536	107	101	60-129	5	30	
Acetone	ug/L	211	500	500	598	632	77	84	62-132	6	30	
Acrylonitrile	ug/L	ND	1000	1000	918	889	92	89	68-125	3	30	
Benzene	ug/L	24.9	100	100	124	119	99	94	68-125	4	30	
Bromochloromethane	ug/L	ND	100	100	95.5	88.7	96	89	66-143	7	30	
Bromodichloromethane	ug/L	ND	100	100	92.4	92.3	92	92	74-125	0	30	
Bromoform	ug/L	ND	100	100	103	94.8	103	95	64-134	8	30	
Bromomethane	ug/L	ND	100	100	99.2	89.0	99	89	30-150	11	30	
Carbon disulfide	ug/L	ND	100	100	96.7	94.7	97	95	43-147	2	30	
Carbon tetrachloride	ug/L	ND	100	100	105	101	105	101	71-143	5	30	
Chlorobenzene	ug/L	10.0	100	100	114	111	104	101	75-125	3	30	
Chloroethane	ug/L	ND	100	100	102	94.5	102	95	75-129	8	30	
Chloroform	ug/L	ND	100	100	98.1	90.8	98	91	66-132	8	30	
Chloromethane	ug/L	ND	100	100	110	110	110	110	53-137	0	30	
cis-1,2-Dichloroethene	ug/L	ND	100	100	94.8	90.7	95	91	67-133	4	30	
cis-1,3-Dichloropropene	ug/L	ND	100	100	92.7	92.7	93	93	66-125	0	30	
Cyclohexane	ug/L	ND	500	500	522	495	104	99	74-146	5	30	
Dibromochloromethane	ug/L	ND	100	100	92.4	87.7	92	88	62-132	5	30	
Dibromomethane	ug/L	ND	100	100	88.2	91.2	88	91	67-125	3	30	
Dichlorodifluoromethane	ug/L	ND	100	100	121	123	121	123	71-142	2	30	
Ethylbenzene	ug/L	ND	100	100	115	109	111	106	74-126	5	30	
Iodomethane	ug/L	ND	100	100	91.3	103	91	103	70-139	12	30	
Isopropylbenzene (Cumene)	ug/L	ND	100	100	112	109	112	109	74-130	3	30	
Methyl-tert-butyl ether	ug/L	ND	100	100	77.9	78.0	78	78	65-131	0	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3488948 3488949

Parameter	Units	10501579001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methylene Chloride	ug/L	ND	100	100	96.8	104	97	104	57-125	7	30	
n-Hexane	ug/L	ND	250	250	281	285	113	114	30-150	1	30	
n-Propylbenzene	ug/L	ND	100	100	110	116	110	116	67-138	5	30	
Styrene	ug/L	ND	100	100	107	96.7	107	97	72-125	10	30	
Tetrachloroethene	ug/L	ND	100	100	115	106	115	106	72-129	8	30	
Tetrahydrofuran	ug/L	ND	1000	1000	892	866	89	87	66-128	3	30	
Toluene	ug/L	37.9	100	100	147	139	109	101	73-125	5	30	
trans-1,2-Dichloroethene	ug/L	ND	100	100	95.4	96.6	95	97	62-137	1	30	
trans-1,3-Dichloropropene	ug/L	ND	100	100	98.0	94.5	98	95	61-136	4	30	
trans-1,4-Dichloro-2-butene	ug/L	ND	250	250	216	232	86	93	45-128	7	30	
Trichloroethene	ug/L	ND	100	100	100	98.3	100	98	74-132	2	30	
Trichlorofluoromethane	ug/L	ND	100	100	119	116	119	116	75-139	2	30	
Vinyl acetate	ug/L	ND	100	100	93.8J	87.5J	94	88	51-135		30	
Vinyl chloride	ug/L	ND	100	100	117	116	117	116	68-146	1	30	
Xylene (Total)	ug/L	23.5	300	300	382	351	120	109	67-137	8	30	
1,2-Dichloroethane-d4 (S)	%.						111	109	75-136			
4-Bromofluorobenzene (S)	%.						94	98	75-125			
Toluene-d8 (S)	%.						109	105	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 648581 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV LL Water
Associated Lab Samples: 10501501002, 10501501005, 10501501009, 10501501015, 10501501016, 10501501017, 10501501018, 10501501021, 10501501022, 10501501023, 10501501025, 10501501026, 10501501027, 10501501029, 10501501030

METHOD BLANK: 3488929 Matrix: Water
Associated Lab Samples: 10501501002, 10501501005, 10501501009, 10501501015, 10501501016, 10501501017, 10501501018, 10501501021, 10501501022, 10501501023, 10501501025, 10501501026, 10501501027, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.20	0.50	0.20	12/06/19 21:07	
1,1,1-Trichloroethane	ug/L	<0.14	0.50	0.14	12/06/19 21:07	
1,1,2,2-Tetrachloroethane	ug/L	<0.17	0.50	0.17	12/06/19 21:07	
1,1,2-Trichloroethane	ug/L	<0.18	0.50	0.18	12/06/19 21:07	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.22	1.0	0.22	12/06/19 21:07	
1,1-Dichloroethane	ug/L	<0.17	0.50	0.17	12/06/19 21:07	
1,1-Dichloroethene	ug/L	<0.16	0.50	0.16	12/06/19 21:07	
1,2,3-Trichloropropane	ug/L	<0.26	4.0	0.26	12/06/19 21:07	
1,2,4-Trimethylbenzene	ug/L	<0.20	0.50	0.20	12/06/19 21:07	
1,2-Dibromo-3-chloropropane	ug/L	<1.7	10.0	1.7	12/06/19 21:07	
1,2-Dibromoethane (EDB)	ug/L	<0.24	0.50	0.24	12/06/19 21:07	
1,2-Dichlorobenzene	ug/L	<0.14	0.50	0.14	12/06/19 21:07	
1,2-Dichloroethane	ug/L	<0.22	1.0	0.22	12/06/19 21:07	
1,2-Dichloropropane	ug/L	<0.16	4.0	0.16	12/06/19 21:07	
1,4-Dichlorobenzene	ug/L	<0.17	0.50	0.17	12/06/19 21:07	
1,4-Dioxane (p-Dioxane)	ug/L	<54.6	200	54.6	12/06/19 21:07	
2-Butanone (MEK)	ug/L	<0.99	5.0	0.99	12/06/19 21:07	
2-Hexanone	ug/L	<0.88	5.0	0.88	12/06/19 21:07	
2-Propanol	ug/L	<29.6	100	29.6	12/06/19 21:07	
4-Methyl-2-pentanone (MIBK)	ug/L	<0.42	5.0	0.42	12/06/19 21:07	
Acetone	ug/L	<9.2	20.0	9.2	12/06/19 21:07	
Acrylonitrile	ug/L	<0.91	10.0	0.91	12/06/19 21:07	
Benzene	ug/L	<0.10	0.50	0.10	12/06/19 21:07	
Bromochloromethane	ug/L	<0.27	1.0	0.27	12/06/19 21:07	
Bromodichloromethane	ug/L	<0.22	0.50	0.22	12/06/19 21:07	
Bromoform	ug/L	<0.80	4.0	0.80	12/06/19 21:07	
Bromomethane	ug/L	<1.8	4.0	1.8	12/06/19 21:07	
Carbon disulfide	ug/L	<0.19	1.0	0.19	12/06/19 21:07	
Carbon tetrachloride	ug/L	<0.19	0.50	0.19	12/06/19 21:07	
Chlorobenzene	ug/L	<0.17	0.50	0.17	12/06/19 21:07	
Chloroethane	ug/L	<0.49	1.0	0.49	12/06/19 21:07	
Chloroform	ug/L	<0.45	4.0	0.45	12/06/19 21:07	
Chloromethane	ug/L	<0.48	4.0	0.48	12/06/19 21:07	
cis-1,2-Dichloroethene	ug/L	<0.15	0.50	0.15	12/06/19 21:07	
cis-1,3-Dichloropropene	ug/L	<0.20	1.0	0.20	12/06/19 21:07	
Cyclohexane	ug/L	<0.54	5.0	0.54	12/06/19 21:07	
Dibromochloromethane	ug/L	<0.12	1.0	0.12	12/06/19 21:07	
Dibromomethane	ug/L	<0.16	1.0	0.16	12/06/19 21:07	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

METHOD BLANK: 3488929 Matrix: Water

Associated Lab Samples: 10501501002, 10501501005, 10501501009, 10501501015, 10501501016, 10501501017, 10501501018, 10501501021, 10501501022, 10501501023, 10501501025, 10501501026, 10501501027, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/L	<0.23	1.0	0.23	12/06/19 21:07	
Ethylbenzene	ug/L	<0.14	0.50	0.14	12/06/19 21:07	
Iodomethane	ug/L	<0.82	4.0	0.82	12/06/19 21:07	
Isopropylbenzene (Cumene)	ug/L	<0.18	1.0	0.18	12/06/19 21:07	
Methyl-tert-butyl ether	ug/L	<0.16	0.50	0.16	12/06/19 21:07	
Methylene Chloride	ug/L	<0.98	4.0	0.98	12/06/19 21:07	
n-Hexane	ug/L	<4.6	10.0	4.6	12/06/19 21:07	
n-Propylbenzene	ug/L	<0.10	0.50	0.10	12/06/19 21:07	
Styrene	ug/L	<0.19	1.0	0.19	12/06/19 21:07	
Tetrachloroethene	ug/L	<0.17	0.50	0.17	12/06/19 21:07	
Tetrahydrofuran	ug/L	<2.2	10.0	2.2	12/06/19 21:07	
Toluene	ug/L	<0.083	0.50	0.083	12/06/19 21:07	
trans-1,2-Dichloroethene	ug/L	<0.12	0.50	0.12	12/06/19 21:07	
trans-1,3-Dichloropropene	ug/L	<0.18	1.0	0.18	12/06/19 21:07	
trans-1,4-Dichloro-2-butene	ug/L	<2.0	10.0	2.0	12/06/19 21:07	
Trichloroethene	ug/L	<0.15	0.40	0.15	12/06/19 21:07	
Trichlorofluoromethane	ug/L	<0.23	1.0	0.23	12/06/19 21:07	
Vinyl acetate	ug/L	<1.1	10.0	1.1	12/06/19 21:07	
Vinyl chloride	ug/L	<0.092	0.20	0.092	12/06/19 21:07	
Xylene (Total)	ug/L	<0.31	1.5	0.31	12/06/19 21:07	
1,2-Dichloroethane-d4 (S)	%.	105	75-136		12/06/19 21:07	
4-Bromofluorobenzene (S)	%.	96	75-125		12/06/19 21:07	
Toluene-d8 (S)	%.	110	75-125		12/06/19 21:07	

LABORATORY CONTROL SAMPLE: 3488930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	10	10.2	102	68-141	
1,1,1-Trichloroethane	ug/L	10	9.9	99	75-129	
1,1,2,2-Tetrachloroethane	ug/L	10	11.4	114	73-125	
1,1,2-Trichloroethane	ug/L	10	10.9	109	74-131	
1,1,2-Trichlorotrifluoroethane	ug/L	10	11.1	111	69-132	
1,1-Dichloroethane	ug/L	10	9.9	99	73-125	
1,1-Dichloroethene	ug/L	10	10	100	71-126	
1,2,3-Trichloropropane	ug/L	10	11.4	114	75-126	
1,2,4-Trimethylbenzene	ug/L	10	12.2	122	72-134	
1,2-Dibromo-3-chloropropane	ug/L	25	26.6	107	60-135	
1,2-Dibromoethane (EDB)	ug/L	10	10.3	103	75-129	
1,2-Dichlorobenzene	ug/L	10	11.6	116	75-129	
1,2-Dichloroethane	ug/L	10	9.7	97	75-125	
1,2-Dichloropropane	ug/L	10	10.3	103	75-125	
1,4-Dichlorobenzene	ug/L	10	11.2	112	75-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

LABORATORY CONTROL SAMPLE: 3488930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	200	203	101	72-129	
2-Butanone (MEK)	ug/L	50	44.8	90	59-144	
2-Hexanone	ug/L	50	52.1	104	73-134	
2-Propanol	ug/L	100	90.3J	90	68-125	
4-Methyl-2-pentanone (MIBK)	ug/L	50	54.7	109	62-141	
Acetone	ug/L	50	41.0	82	60-137	
Acrylonitrile	ug/L	100	96.7	97	75-129	
Benzene	ug/L	10	9.8	98	73-125	
Bromochloromethane	ug/L	10	9.8	98	75-135	
Bromodichloromethane	ug/L	10	9.6	96	75-125	
Bromoform	ug/L	10	10.3	103	67-136	
Bromomethane	ug/L	10	10.0	100	30-150	
Carbon disulfide	ug/L	10	9.5	95	47-137	
Carbon tetrachloride	ug/L	10	10.6	106	75-125	
Chlorobenzene	ug/L	10	10.9	109	75-125	
Chloroethane	ug/L	10	10.4	104	63-136	
Chloroform	ug/L	10	9.7	97	73-128	
Chloromethane	ug/L	10	10.4	104	55-130	
cis-1,2-Dichloroethene	ug/L	10	9.6	96	75-125	
cis-1,3-Dichloropropene	ug/L	10	9.5	95	74-125	
Cyclohexane	ug/L	50	50.1	100	67-125	
Dibromochloromethane	ug/L	10	9.6	96	75-125	
Dibromomethane	ug/L	10	9.3	93	75-125	
Dichlorodifluoromethane	ug/L	10	11.6	116	63-132	
Ethylbenzene	ug/L	10	11.0	110	75-125	
Iodomethane	ug/L	10	8.6	86	72-125	
Isopropylbenzene (Cumene)	ug/L	10	11.0	110	75-125	
Methyl-tert-butyl ether	ug/L	10	7.5	75	75-125	
Methylene Chloride	ug/L	10	10.5	105	70-125	
n-Hexane	ug/L	25	26.0	104	51-150	
n-Propylbenzene	ug/L	10	11.6	116	73-127	
Styrene	ug/L	10	10.7	107	75-125	
Tetrachloroethene	ug/L	10	10.8	108	74-125	
Tetrahydrofuran	ug/L	100	98.2	98	64-138	
Toluene	ug/L	10	10.9	109	74-125	
trans-1,2-Dichloroethene	ug/L	10	9.8	98	68-128	
trans-1,3-Dichloropropene	ug/L	10	9.7	97	75-125	
trans-1,4-Dichloro-2-butene	ug/L	25	25.1	100	60-127	
Trichloroethene	ug/L	10	10.4	104	75-127	
Trichlorofluoromethane	ug/L	10	11.8	118	72-133	
Vinyl acetate	ug/L	10	8.7J	87	61-129	
Vinyl chloride	ug/L	10	11.3	113	75-128	
Xylene (Total)	ug/L	30	35.4	118	75-125	
1,2-Dichloroethane-d4 (S)	%.			105	75-136	
4-Bromofluorobenzene (S)	%.			101	75-125	
Toluene-d8 (S)	%.			108	75-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3488931 3488932

Parameter	Units	10501501002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	<0.20	10	10	10.6	10.8	106	108	75-140	2	30	
1,1,1-Trichloroethane	ug/L	<0.14	10	10	10.6	10.9	106	109	74-136	3	30	
1,1,2,2-Tetrachloroethane	ug/L	<0.17	10	10	10.2	10.8	102	108	66-134	6	30	
1,1,2-Trichloroethane	ug/L	<0.18	10	10	10.7	10.7	107	107	75-126	0	30	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.22	10	10	12.6	13.1	126	131	65-146	4	30	
1,1-Dichloroethane	ug/L	<0.17	10	10	10.3	9.9	103	99	68-132	3	30	
1,1-Dichloroethene	ug/L	<0.16	10	10	11.2	10.9	112	109	66-139	3	30	
1,2,3-Trichloropropane	ug/L	<0.26	10	10	10.6	9.9	106	99	69-128	6	30	
1,2,4-Trimethylbenzene	ug/L	<0.20	10	10	12.6	13.0	126	130	71-133	3	30	
1,2-Dibromo-3-chloropropane	ug/L	<1.7	25	25	26.2	26.1	105	104	54-138	0	30	
1,2-Dibromoethane (EDB)	ug/L	<0.24	10	10	10.3	10.5	103	105	68-125	2	30	
1,2-Dichlorobenzene	ug/L	<0.14	10	10	12.0	12.1	120	121	74-136	1	30	
1,2-Dichloroethane	ug/L	<0.22	10	10	9.5	9.7	95	97	68-125	1	30	
1,2-Dichloropropane	ug/L	<0.16	10	10	10.2	10.5	102	105	67-125	3	30	
1,4-Dichlorobenzene	ug/L	<0.17	10	10	11.8	12.3	118	123	74-126	4	30	
1,4-Dioxane (p-Dioxane)	ug/L	<54.6	200	200	210	211	105	106	68-125	0	30	
2-Butanone (MEK)	ug/L	<0.99	50	50	39.1	41.9	78	84	54-144	7	30	
2-Hexanone	ug/L	<0.88	50	50	48.2	52.0	96	104	58-137	8	30	
2-Propanol	ug/L	<29.6	100	100	115	94.0J	115	94	40-150		30	
4-Methyl-2-pentanone (MIBK)	ug/L	<0.42	50	50	52.2	54.0	104	108	60-129	3	30	
Acetone	ug/L	<9.2	50	50	39.3	45.2	79	90	62-132	14	30	
Acrylonitrile	ug/L	<0.91	100	100	90.1	93.2	90	93	68-125	3	30	
Benzene	ug/L	<0.10	10	10	10.3	10.1	103	101	68-125	2	30	
Bromochloromethane	ug/L	<0.27	10	10	9.7	9.8	97	98	66-143	1	30	
Bromodichloromethane	ug/L	<0.22	10	10	9.6	9.8	96	98	74-125	2	30	
Bromoform	ug/L	<0.80	10	10	9.7	10.4	97	104	64-134	7	30	
Bromomethane	ug/L	<1.8	10	10	9.6	9.4	96	94	30-150	2	30	
Carbon disulfide	ug/L	<0.19	10	10	11.0	10.1	110	101	43-147	8	30	
Carbon tetrachloride	ug/L	<0.19	10	10	11.9	11.8	119	118	71-143	0	30	
Chlorobenzene	ug/L	<0.17	10	10	11.0	11.3	110	113	75-125	3	30	
Chloroethane	ug/L	<0.49	10	10	9.5	9.8	95	98	75-129	3	30	
Chloroform	ug/L	<0.45	10	10	9.4	9.8	94	98	66-132	4	30	
Chloromethane	ug/L	<0.48	10	10	11.0	10.4	110	104	53-137	6	30	
cis-1,2-Dichloroethene	ug/L	1.3	10	10	11.5	11.2	101	98	67-133	3	30	
cis-1,3-Dichloropropene	ug/L	<0.20	10	10	8.6	9.2	86	92	66-125	6	30	
Cyclohexane	ug/L	<0.54	50	50	56.3	62.5	113	125	74-146	11	30	
Dibromochloromethane	ug/L	<0.12	10	10	9.6	9.8	96	98	62-132	2	30	
Dibromomethane	ug/L	<0.16	10	10	9.7	9.7	97	97	67-125	1	30	
Dichlorodifluoromethane	ug/L	<0.23	10	10	12.6	12.2	126	122	71-142	3	30	
Ethylbenzene	ug/L	<0.14	10	10	11.9	12.1	119	121	74-126	2	30	
Iodomethane	ug/L	<0.82	10	10	10.6	10.7	106	107	70-139	0	30	
Isopropylbenzene (Cumene)	ug/L	<0.18	10	10	12.1	12.8	121	128	74-130	5	30	
Methyl-tert-butyl ether	ug/L	<0.16	10	10	7.5	7.8	75	78	65-131	4	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3488931 3488932

Parameter	Units	10501501002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methylene Chloride	ug/L	<0.98	10	10	10.6	10	106	100	57-125	6	30	
n-Hexane	ug/L	<4.6	25	25	31.7	32.3	127	129	30-150	2	30	
n-Propylbenzene	ug/L	<0.10	10	10	12.4	12.8	124	128	67-138	3	30	
Styrene	ug/L	<0.19	10	10	10.8	11.1	108	111	72-125	3	30	
Tetrachloroethene	ug/L	2.4	10	10	14.4	15.1	120	127	72-129	5	30	
Tetrahydrofuran	ug/L	<2.2	100	100	90.7	101	91	101	66-128	11	30	
Toluene	ug/L	<0.083	10	10	11.2	11.4	112	114	73-125	2	30	
trans-1,2-Dichloroethene	ug/L	<0.12	10	10	10.7	10.5	107	105	62-137	2	30	
trans-1,3-Dichloropropene	ug/L	<0.18	10	10	10.0	9.9	100	99	61-136	2	30	
trans-1,4-Dichloro-2-butene	ug/L	<2.0	25	25	24.3	24.9	97	100	45-128	3	30	
Trichloroethene	ug/L	0.62	10	10	11.3	11.2	107	106	74-132	0	30	
Trichlorofluoromethane	ug/L	<0.23	10	10	12.2	12.1	122	121	75-139	0	30	
Vinyl acetate	ug/L	<1.1	10	10	8.8J	9.1J	88	91	51-135		30	
Vinyl chloride	ug/L	<0.092	10	10	11.9	11.5	119	115	68-146	4	30	
Xylene (Total)	ug/L	<0.31	30	30	37.3	37.6	124	125	67-137	1	30	
1,2-Dichloroethane-d4 (S)	%.						109	105	75-136			
4-Bromofluorobenzene (S)	%.						97	96	75-125			
Toluene-d8 (S)	%.						105	107	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 648965 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV LL Water
Associated Lab Samples: 10501501019, 10501501020, 10501501024

METHOD BLANK: 3490918 Matrix: Water
Associated Lab Samples: 10501501019, 10501501020, 10501501024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.20	0.50	0.20	12/09/19 21:19	
1,1,1-Trichloroethane	ug/L	<0.14	0.50	0.14	12/09/19 21:19	
1,1,2,2-Tetrachloroethane	ug/L	<0.17	0.50	0.17	12/09/19 21:19	
1,1,2-Trichloroethane	ug/L	<0.18	0.50	0.18	12/09/19 21:19	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.22	1.0	0.22	12/09/19 21:19	
1,1-Dichloroethane	ug/L	<0.17	0.50	0.17	12/09/19 21:19	
1,1-Dichloroethene	ug/L	<0.16	0.50	0.16	12/09/19 21:19	
1,2,3-Trichloropropane	ug/L	<0.26	4.0	0.26	12/09/19 21:19	
1,2,4-Trimethylbenzene	ug/L	<0.20	0.50	0.20	12/09/19 21:19	
1,2-Dibromo-3-chloropropane	ug/L	<1.7	10.0	1.7	12/09/19 21:19	
1,2-Dibromoethane (EDB)	ug/L	<0.24	0.50	0.24	12/09/19 21:19	
1,2-Dichlorobenzene	ug/L	<0.14	0.50	0.14	12/09/19 21:19	
1,2-Dichloroethane	ug/L	<0.22	1.0	0.22	12/09/19 21:19	
1,2-Dichloropropane	ug/L	<0.16	4.0	0.16	12/09/19 21:19	
1,4-Dichlorobenzene	ug/L	<0.17	0.50	0.17	12/09/19 21:19	
1,4-Dioxane (p-Dioxane)	ug/L	<54.6	200	54.6	12/09/19 21:19	
2-Butanone (MEK)	ug/L	<0.99	5.0	0.99	12/09/19 21:19	
2-Hexanone	ug/L	<0.88	5.0	0.88	12/09/19 21:19	
2-Propanol	ug/L	53.5J	100	29.6	12/09/19 21:19	
4-Methyl-2-pentanone (MIBK)	ug/L	<0.42	5.0	0.42	12/09/19 21:19	
Acetone	ug/L	<9.2	20.0	9.2	12/09/19 21:19	
Acrylonitrile	ug/L	<0.91	10.0	0.91	12/09/19 21:19	
Benzene	ug/L	<0.10	0.50	0.10	12/09/19 21:19	
Bromochloromethane	ug/L	<0.27	1.0	0.27	12/09/19 21:19	
Bromodichloromethane	ug/L	<0.22	0.50	0.22	12/09/19 21:19	
Bromoform	ug/L	<0.80	4.0	0.80	12/09/19 21:19	
Bromomethane	ug/L	<1.8	4.0	1.8	12/09/19 21:19	
Carbon disulfide	ug/L	<0.19	1.0	0.19	12/09/19 21:19	
Carbon tetrachloride	ug/L	<0.19	0.50	0.19	12/09/19 21:19	
Chlorobenzene	ug/L	<0.17	0.50	0.17	12/09/19 21:19	
Chloroethane	ug/L	<0.49	1.0	0.49	12/09/19 21:19	
Chloroform	ug/L	<0.45	4.0	0.45	12/09/19 21:19	
Chloromethane	ug/L	<0.48	4.0	0.48	12/09/19 21:19	
cis-1,2-Dichloroethene	ug/L	<0.15	0.50	0.15	12/09/19 21:19	
cis-1,3-Dichloropropene	ug/L	<0.20	1.0	0.20	12/09/19 21:19	
Cyclohexane	ug/L	<0.54	5.0	0.54	12/09/19 21:19	
Dibromochloromethane	ug/L	<0.12	1.0	0.12	12/09/19 21:19	
Dibromomethane	ug/L	<0.16	1.0	0.16	12/09/19 21:19	
Dichlorodifluoromethane	ug/L	<0.23	1.0	0.23	12/09/19 21:19	
Ethylbenzene	ug/L	<0.14	0.50	0.14	12/09/19 21:19	
Iodomethane	ug/L	<0.82	4.0	0.82	12/09/19 21:19	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

METHOD BLANK: 3490918 Matrix: Water
Associated Lab Samples: 10501501019, 10501501020, 10501501024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.18	1.0	0.18	12/09/19 21:19	
Methyl-tert-butyl ether	ug/L	<0.16	0.50	0.16	12/09/19 21:19	
Methylene Chloride	ug/L	<0.98	4.0	0.98	12/09/19 21:19	
n-Hexane	ug/L	<4.6	10.0	4.6	12/09/19 21:19	
n-Propylbenzene	ug/L	<0.10	0.50	0.10	12/09/19 21:19	
Styrene	ug/L	<0.19	1.0	0.19	12/09/19 21:19	
Tetrachloroethene	ug/L	<0.17	0.50	0.17	12/09/19 21:19	
Tetrahydrofuran	ug/L	<2.2	10.0	2.2	12/09/19 21:19	
Toluene	ug/L	<0.083	0.50	0.083	12/09/19 21:19	
trans-1,2-Dichloroethene	ug/L	<0.12	0.50	0.12	12/09/19 21:19	
trans-1,3-Dichloropropene	ug/L	<0.18	1.0	0.18	12/09/19 21:19	
trans-1,4-Dichloro-2-butene	ug/L	<2.0	10.0	2.0	12/09/19 21:19	
Trichloroethene	ug/L	<0.15	0.40	0.15	12/09/19 21:19	
Trichlorofluoromethane	ug/L	<0.23	1.0	0.23	12/09/19 21:19	
Vinyl acetate	ug/L	<1.1	10.0	1.1	12/09/19 21:19	
Vinyl chloride	ug/L	<0.092	0.20	0.092	12/09/19 21:19	
Xylene (Total)	ug/L	<0.31	1.5	0.31	12/09/19 21:19	
1,2-Dichloroethane-d4 (S)	%.	101	75-136		12/09/19 21:19	
4-Bromofluorobenzene (S)	%.	101	75-125		12/09/19 21:19	
Toluene-d8 (S)	%.	111	75-125		12/09/19 21:19	

LABORATORY CONTROL SAMPLE: 3490919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	10	10.6	106	68-141	
1,1,1-Trichloroethane	ug/L	10	9.9	99	75-129	
1,1,2,2-Tetrachloroethane	ug/L	10	10.5	105	73-125	
1,1,2-Trichloroethane	ug/L	10	11.3	113	74-131	
1,1,2-Trichlorotrifluoroethane	ug/L	10	12.1	121	69-132	
1,1-Dichloroethane	ug/L	10	9.7	97	73-125	
1,1-Dichloroethene	ug/L	10	11.2	112	71-126	
1,2,3-Trichloropropane	ug/L	10	11.1	111	75-126	
1,2,4-Trimethylbenzene	ug/L	10	11.4	114	72-134	
1,2-Dibromo-3-chloropropane	ug/L	25	26.2	105	60-135	
1,2-Dibromoethane (EDB)	ug/L	10	10.9	109	75-129	
1,2-Dichlorobenzene	ug/L	10	11.3	113	75-129	
1,2-Dichloroethane	ug/L	10	9.7	97	75-125	
1,2-Dichloropropane	ug/L	10	9.9	99	75-125	
1,4-Dichlorobenzene	ug/L	10	10.9	109	75-125	
1,4-Dioxane (p-Dioxane)	ug/L	200	186J	93	72-129	
2-Butanone (MEK)	ug/L	50	44.3	89	59-144	
2-Hexanone	ug/L	50	51.5	103	73-134	
2-Propanol	ug/L	100	149	149	68-125	CH,L3
4-Methyl-2-pentanone (MIBK)	ug/L	50	54.2	108	62-141	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

LABORATORY CONTROL SAMPLE: 3490919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acetone	ug/L	50	47.8	96	60-137	
Acrylonitrile	ug/L	100	92.7	93	75-129	
Benzene	ug/L	10	9.9	99	73-125	
Bromochloromethane	ug/L	10	10.1	101	75-135	
Bromodichloromethane	ug/L	10	10.0	100	75-125	
Bromoform	ug/L	10	10.7	107	67-136	
Bromomethane	ug/L	10	9.4	94	30-150	
Carbon disulfide	ug/L	10	10.6	106	47-137	
Carbon tetrachloride	ug/L	10	10.8	108	75-125	
Chlorobenzene	ug/L	10	10.9	109	75-125	
Chloroethane	ug/L	10	10.3	103	63-136	
Chloroform	ug/L	10	10.1	101	73-128	
Chloromethane	ug/L	10	9.4	94	55-130	
cis-1,2-Dichloroethene	ug/L	10	9.9	99	75-125	
cis-1,3-Dichloropropene	ug/L	10	8.9	89	74-125	
Cyclohexane	ug/L	50	48.3	97	67-125	
Dibromochloromethane	ug/L	10	9.8	98	75-125	
Dibromomethane	ug/L	10	9.4	94	75-125	
Dichlorodifluoromethane	ug/L	10	10	100	63-132	
Ethylbenzene	ug/L	10	10.8	108	75-125	
Iodomethane	ug/L	10	10.3	103	72-125	
Isopropylbenzene (Cumene)	ug/L	10	10.8	108	75-125	
Methyl-tert-butyl ether	ug/L	10	7.8	78	75-125	
Methylene Chloride	ug/L	10	11.3	113	70-125	
n-Hexane	ug/L	25	26.7	107	51-150	
n-Propylbenzene	ug/L	10	10.7	107	73-127	
Styrene	ug/L	10	10.7	107	75-125	
Tetrachloroethene	ug/L	10	11.2	112	74-125	
Tetrahydrofuran	ug/L	100	90.8	91	64-138	
Toluene	ug/L	10	11.7	117	74-125	
trans-1,2-Dichloroethene	ug/L	10	10.9	109	68-128	
trans-1,3-Dichloropropene	ug/L	10	9.8	98	75-125	
trans-1,4-Dichloro-2-butene	ug/L	25	23.4	94	60-127	
Trichloroethene	ug/L	10	10.6	106	75-127	
Trichlorofluoromethane	ug/L	10	11.9	119	72-133	
Vinyl acetate	ug/L	10	8.7J	87	61-129	
Vinyl chloride	ug/L	10	10.2	102	75-128	
Xylene (Total)	ug/L	30	34.1	114	75-125	
1,2-Dichloroethane-d4 (S)	%.			102	75-136	
4-Bromofluorobenzene (S)	%.			94	75-125	
Toluene-d8 (S)	%.			110	75-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3490920 3490921

Parameter	Units	10501501019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	<0.20	10	10	10.5	10.3	105	103	75-140	2	30	
1,1,1-Trichloroethane	ug/L	<0.14	10	10	9.7	9.6	97	96	74-136	1	30	
1,1,2,2-Tetrachloroethane	ug/L	<0.17	10	10	10.0	10.5	100	105	66-134	5	30	
1,1,2-Trichloroethane	ug/L	<0.18	10	10	10.9	10.6	109	106	75-126	2	30	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.22	10	10	12.2	11.5	122	115	65-146	6	30	
1,1-Dichloroethane	ug/L	<0.17	10	10	9.1	9.6	91	96	68-132	6	30	
1,1-Dichloroethene	ug/L	<0.16	10	10	11.8	10.4	118	104	66-139	12	30	
1,2,3-Trichloropropane	ug/L	<0.26	10	10	10.9	10.7	109	107	69-128	2	30	
1,2,4-Trimethylbenzene	ug/L	<0.20	10	10	11.9	12.6	119	126	71-133	6	30	
1,2-Dibromo-3-chloropropane	ug/L	<1.7	25	25	25.0	26.1	100	104	54-138	4	30	
1,2-Dibromoethane (EDB)	ug/L	<0.24	10	10	10.4	10.0	104	100	68-125	3	30	
1,2-Dichlorobenzene	ug/L	<0.14	10	10	10.6	11.7	106	117	74-136	10	30	
1,2-Dichloroethane	ug/L	<0.22	10	10	9.4	9.1	94	91	68-125	4	30	
1,2-Dichloropropane	ug/L	<0.16	10	10	9.7	9.4	97	94	67-125	4	30	
1,4-Dichlorobenzene	ug/L	<0.17	10	10	10.8	11.3	108	113	74-126	4	30	
1,4-Dioxane (p-Dioxane)	ug/L	<54.6	200	200	198J	198J	99	99	68-125		30	
2-Butanone (MEK)	ug/L	<0.99	50	50	38.2	41.6	76	83	54-144	9	30	
2-Hexanone	ug/L	<0.88	50	50	50.7	50.1	101	100	58-137	1	30	
2-Propanol	ug/L	<29.6	100	100	95.0J	75.7J	95	76	40-150		30	CH
4-Methyl-2-pentanone (MIBK)	ug/L	<0.42	50	50	52.7	52.3	105	105	60-129	1	30	
Acetone	ug/L	<9.2	50	50	39.6	39.3	79	79	62-132	1	30	
Acrylonitrile	ug/L	<0.91	100	100	82.5	87.9	83	88	68-125	6	30	
Benzene	ug/L	0.13J	10	10	10	9.7	99	96	68-125	3	30	
Bromochloromethane	ug/L	<0.27	10	10	9.3	8.4	93	84	66-143	9	30	
Bromodichloromethane	ug/L	<0.22	10	10	9.9	9.1	99	91	74-125	8	30	
Bromoform	ug/L	<0.80	10	10	10.2	10.1	102	101	64-134	1	30	
Bromomethane	ug/L	<1.8	10	10	8.3	8.0	83	80	30-150	4	30	
Carbon disulfide	ug/L	<0.19	10	10	11.3	9.4	113	94	43-147	18	30	
Carbon tetrachloride	ug/L	<0.19	10	10	10.8	10.5	108	105	71-143	2	30	
Chlorobenzene	ug/L	<0.17	10	10	11.0	10.8	110	108	75-125	2	30	
Chloroethane	ug/L	<0.49	10	10	9.6	8.7	96	87	75-129	10	30	
Chloroform	ug/L	<0.45	10	10	8.8	8.9	88	89	66-132	1	30	
Chloromethane	ug/L	<0.48	10	10	9.6	8.8	96	88	53-137	9	30	
cis-1,2-Dichloroethene	ug/L	<0.15	10	10	8.9	8.6	89	86	67-133	3	30	
cis-1,3-Dichloropropene	ug/L	<0.20	10	10	7.3	8.2	73	82	66-125	12	30	
Cyclohexane	ug/L	<0.54	50	50	51.2	53.7	102	107	74-146	5	30	
Dibromochloromethane	ug/L	<0.12	10	10	9.6	9.6	96	96	62-132	0	30	
Dibromomethane	ug/L	<0.16	10	10	9.1	9.4	91	94	67-125	3	30	
Dichlorodifluoromethane	ug/L	<0.23	10	10	10.8	10.3	108	103	71-142	5	30	
Ethylbenzene	ug/L	<0.14	10	10	11.6	11.4	116	114	74-126	1	30	
Iodomethane	ug/L	<0.82	10	10	10.8	10.3	108	103	70-139	5	30	
Isopropylbenzene (Cumene)	ug/L	<0.18	10	10	11.7	12.2	117	122	74-130	4	30	
Methyl-tert-butyl ether	ug/L	<0.16	10	10	6.7	6.6	67	66	65-131	2	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3490920 3490921

Parameter	Units	10501501019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methylene Chloride	ug/L	<0.98	10	10	10.1	8.6	101	86	57-125	16	30	
n-Hexane	ug/L	<4.6	25	25	28.1	29.5	112	118	30-150	5	30	
n-Propylbenzene	ug/L	<0.10	10	10	11.5	12.4	115	124	67-138	8	30	
Styrene	ug/L	<0.19	10	10	10.6	10.9	106	109	72-125	3	30	
Tetrachloroethene	ug/L	<0.17	10	10	12.0	12.1	120	121	72-129	0	30	
Tetrahydrofuran	ug/L	<2.2	100	100	86.9	100	87	100	66-128	14	30	
Toluene	ug/L	0.27J	10	10	11.6	11.2	113	110	73-125	3	30	
trans-1,2-Dichloroethene	ug/L	<0.12	10	10	10	9.2	100	92	62-137	8	30	
trans-1,3-Dichloropropene	ug/L	<0.18	10	10	9.7	9.7	97	97	61-136	0	30	
trans-1,4-Dichloro-2-butene	ug/L	<2.0	25	25	22.6	24.2	90	97	45-128	7	30	
Trichloroethene	ug/L	<0.15	10	10	10.8	10.1	108	101	74-132	7	30	
Trichlorofluoromethane	ug/L	<0.23	10	10	12.0	11.8	120	118	75-139	1	30	
Vinyl acetate	ug/L	<1.1	10	10	7.9J	8.1J	79	81	51-135		30	
Vinyl chloride	ug/L	<0.092	10	10	10.6	9.6	106	96	68-146	10	30	
Xylene (Total)	ug/L	<0.31	30	30	35.2	36.4	117	121	67-137	3	30	
1,2-Dichloroethane-d4 (S)	%.						101	104	75-136			
4-Bromofluorobenzene (S)	%.						94	97	75-125			
Toluene-d8 (S)	%.						107	107	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 650172 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10501501002, 10501501003, 10501501004, 10501501005, 10501501007, 10501501008, 10501501011, 10501501012, 10501501013, 10501501014, 10501501015, 10501501017, 10501501024, 10501501028, 10501501029, 10501501030

METHOD BLANK: 3496588 Matrix: Water
Associated Lab Samples: 10501501002, 10501501003, 10501501004, 10501501005, 10501501007, 10501501008, 10501501011, 10501501012, 10501501013, 10501501014, 10501501015, 10501501017, 10501501024, 10501501028, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.29J	1.0	0.12	12/17/19 15:38	
Sulfate	mg/L	<0.37	1.0	0.37	12/17/19 15:38	

METHOD BLANK: 3496590 Matrix: Water
Associated Lab Samples: 10501501002, 10501501003, 10501501004, 10501501005, 10501501007, 10501501008, 10501501011, 10501501012, 10501501013, 10501501014, 10501501015, 10501501017, 10501501024, 10501501028, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.35J	1.0	0.12	12/17/19 16:14	
Sulfate	mg/L	<0.37	1.0	0.37	12/17/19 16:14	

LABORATORY CONTROL SAMPLE: 3496589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	9.7	97	90-110	
Sulfate	mg/L	10	10	100	90-110	

LABORATORY CONTROL SAMPLE: 3496591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.2	102	90-110	
Sulfate	mg/L	10	10.4	104	90-110	

MATRIX SPIKE SAMPLE: 3496593

Parameter	Units	10501501012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	45.2	50	103	115	90-110	E,M1
Sulfate	mg/L	26.2	20	47.5	106	90-110	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

MATRIX SPIKE SAMPLE: 3496595

Parameter	Units	10502724001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	1000	1090	100	90-110	
Sulfate	mg/L	717	1000	1760	105	90-110	

SAMPLE DUPLICATE: 3496592

Parameter	Units	10501501004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	4.3	4.3	1	20	
Sulfate	mg/L	9.4	9.4	0	20	

SAMPLE DUPLICATE: 3496594

Parameter	Units	10501501024 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	39.5	38.7	2	20	
Sulfate	mg/L	39.0	38.5	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 650170 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
Associated Lab Samples: 10501501001, 10501501002, 10501501003, 10501501004, 10501501005, 10501501006, 10501501007, 10501501008

METHOD BLANK: 3496579 Matrix: Water
Associated Lab Samples: 10501501001, 10501501002, 10501501003, 10501501004, 10501501005, 10501501006, 10501501007, 10501501008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.010	0.020	0.010	12/16/19 16:19	

LABORATORY CONTROL SAMPLE: 3496580

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.33	0.36	109	90-110	

MATRIX SPIKE SAMPLE: 3496745

Parameter	Units	10501255001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.040	0.33	0.39	106	90-110	

MATRIX SPIKE SAMPLE: 3496747

Parameter	Units	10501501001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	3.7	6.7	10.8	106	90-110	E

SAMPLE DUPLICATE: 3496746

Parameter	Units	10501255002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.052	0.054	4	20	

SAMPLE DUPLICATE: 3496748

Parameter	Units	10501501002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	4.6	4.6	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

QC Batch: 650182 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
Associated Lab Samples: 10501501009, 10501501010, 10501501011, 10501501012, 10501501013, 10501501024, 10501501026, 10501501028, 10501501029, 10501501030

METHOD BLANK: 3496622 Matrix: Water
Associated Lab Samples: 10501501009, 10501501010, 10501501011, 10501501012, 10501501013, 10501501024, 10501501026, 10501501028, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.010	0.020	0.010	12/17/19 14:05	

METHOD BLANK: 3496624 Matrix: Water
Associated Lab Samples: 10501501009, 10501501010, 10501501011, 10501501012, 10501501013, 10501501024, 10501501026, 10501501028, 10501501029, 10501501030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.010	0.020	0.010	12/17/19 14:08	

LABORATORY CONTROL SAMPLE: 3496623

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.33	0.35	105	90-110	

LABORATORY CONTROL SAMPLE: 3496625

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.33	0.35	106	90-110	

MATRIX SPIKE SAMPLE: 3497722

Parameter	Units	10501501009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.010	0.33	0.35	105	90-110	

MATRIX SPIKE SAMPLE: 3497724

Parameter	Units	10501810002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.010	0.33	0.36	108	90-110	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

SAMPLE DUPLICATE: 3497723

Parameter	Units	10501501010 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	6.8	6.9	2	20	

SAMPLE DUPLICATE: 3497732

Parameter	Units	10501810003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.014J	<0.010		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(406)254-7226

QUALIFIERS

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-MT	Pace Analytical Services - Montana

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10501501027	VALLEY VIEW VET WELL	EPA 3020A	648448	EPA 6020	649707
10501501002	LF-3	EPA 3020A	654638	EPA 6020	654828
10501501003	MW-4	EPA 3020A	654638	EPA 6020	654828
10501501004	MW-5	EPA 3020A	654638	EPA 6020	654828
10501501005	MW-6	EPA 3020A	654638	EPA 6020	654828
10501501007	MW-8A	EPA 3020A	654638	EPA 6020	654828
10501501008	MW-9A	EPA 3020A	654638	EPA 6020	654828
10501501011	MW-12	EPA 3020A	654638	EPA 6020	654828
10501501012	MW-13	EPA 3020A	654638	EPA 6020	654828
10501501013	MW-15	EPA 3020A	654638	EPA 6020	654828
10501501014	MW-17	EPA 3020A	654638	EPA 6020	654828
10501501015	MW-18	EPA 3020A	654638	EPA 6020	654828
10501501017	MW-20	EPA 3020A	654638	EPA 6020	654828
10501501024	MW-27	EPA 3020A	654638	EPA 6020	654828
10501501026	McILHATTEN SEEP	EPA 3020A	648998	EPA 6020	649207
10501501028	DUP-1	EPA 3020A	654638	EPA 6020	654828
10501501029	DUP-2	EPA 3020A	654638	EPA 6020	654828
10501501030	DUP-3	EPA 3020A	654638	EPA 6020	654828
10501501001	LF-2	EPA 8260B	648523		
10501501002	LF-3	EPA 8260B	648581		
10501501003	MW-4	EPA 8260B	648523		
10501501004	MW-5	EPA 8260B	648523		
10501501005	MW-6	EPA 8260B	648581		
10501501006	MW-7A	EPA 8260B	648523		
10501501007	MW-8A	EPA 8260B	648523		
10501501008	MW-9A	EPA 8260B	648523		
10501501009	MW-10	EPA 8260B	648581		
10501501010	MW-11	EPA 8260B	648523		
10501501011	MW-12	EPA 8260B	648523		
10501501012	MW-13	EPA 8260B	648523		
10501501013	MW-15	EPA 8260B	648523		
10501501014	MW-17	EPA 8260B	648523		
10501501015	MW-18	EPA 8260B	648581		
10501501016	MW-19	EPA 8260B	648581		
10501501017	MW-20	EPA 8260B	648581		
10501501018	MW-21	EPA 8260B	648581		
10501501019	MW-22	EPA 8260B	648965		
10501501020	MW-23	EPA 8260B	648965		
10501501021	MW-24	EPA 8260B	648581		
10501501022	MW-25	EPA 8260B	648581		
10501501023	MW-26	EPA 8260B	648581		
10501501024	MW-27	EPA 8260B	648965		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 114-710326E.300 Bozeman LF-Revised Report
Pace Project No.: 10501501

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10501501025	SHOP WELL	EPA 8260B	648581		
10501501026	McILHATTEN SEEP	EPA 8260B	648581		
10501501027	VALLEY VIEW VET WELL	EPA 8260B	648581		
10501501028	DUP-1	EPA 8260B	648523		
10501501029	DUP-2	EPA 8260B	648581		
10501501030	DUP-3	EPA 8260B	648581		
10501501031	Trip Blank-1	EPA 8260B	648523		
10501501032	Trip Blank-2	EPA 8260B	648523		
10501501002	LF-3	EPA 300.0	650172		
10501501003	MW-4	EPA 300.0	650172		
10501501004	MW-5	EPA 300.0	650172		
10501501005	MW-6	EPA 300.0	650172		
10501501007	MW-8A	EPA 300.0	650172		
10501501008	MW-9A	EPA 300.0	650172		
10501501011	MW-12	EPA 300.0	650172		
10501501012	MW-13	EPA 300.0	650172		
10501501013	MW-15	EPA 300.0	650172		
10501501014	MW-17	EPA 300.0	650172		
10501501015	MW-18	EPA 300.0	650172		
10501501017	MW-20	EPA 300.0	650172		
10501501024	MW-27	EPA 300.0	650172		
10501501028	DUP-1	EPA 300.0	650172		
10501501029	DUP-2	EPA 300.0	650172		
10501501030	DUP-3	EPA 300.0	650172		
10501501001	LF-2	EPA 353.2	650170		
10501501002	LF-3	EPA 353.2	650170		
10501501003	MW-4	EPA 353.2	650170		
10501501004	MW-5	EPA 353.2	650170		
10501501005	MW-6	EPA 353.2	650170		
10501501006	MW-7A	EPA 353.2	650170		
10501501007	MW-8A	EPA 353.2	650170		
10501501008	MW-9A	EPA 353.2	650170		
10501501009	MW-10	EPA 353.2	650182		
10501501010	MW-11	EPA 353.2	650182		
10501501011	MW-12	EPA 353.2	650182		
10501501012	MW-13	EPA 353.2	650182		
10501501013	MW-15	EPA 353.2	650182		
10501501024	MW-27	EPA 353.2	650182		
10501501026	McILHATTEN SEEP	EPA 353.2	650182		
10501501028	DUP-1	EPA 353.2	650182		
10501501029	DUP-2	EPA 353.2	650182		
10501501030	DUP-3	EPA 353.2	650182		

REPORT OF LABORATORY ANALYSIS

Pace Analytical™
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A — **Required** Client Information:

Company:	Tetra Tech
Address:	851 Bridger Drive, Suite 6
	Bozeman, MT 59715
Email To:	mark.pearson@tetratech.com
Phone: 406-582-8780	Fax: 406-582-8790
Requested Due Date/TAT:	10 day

Section B — **Required** Project Information:

Report To:	Mark Pearson
Copy To:	
Purchase Order No.:	
Project Name:	Bozeman Landfill
Project Number:	114-710326E.300

Section C — Invoice Information:

Attention:	Deb Lloyd
Company Name:	(same as Section A)
Address:	
Pace Quote Reference:	
Pace Project Manager:	Beverly Faraday
Pace Profile #:	21198

REGULATORY AGENCY

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MT

Section D — **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

WO#: 10501501

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 LL VOCs	6020 Metals*	Sulfate, Chloride	353.2 N+N	Res	Pace Project No./ Lab I.D.
1	LF-2	WT	G	12/3/19	1520				4		x		x					x			x		001
2	LF-3	WT	G	12/3/19	1540				6	x	x	x	x					x	x	x	x		002
3	MW-4	WT	G	12/2/19	1220				6	x	x	x	x					x	x	x	x		003
4	MW-5	WT	G	12/2/19	1000				6	x	x	x	x					x	x	x	x		004
5	MW-6	WT	G	12/3/19	930				6	x	x	x	x					x	x	x	x		005
6	MW-7A	WT	G	12/2/19	1300				4		x		x					x			x		006
7	MW-8A	WT	G	12/2/19	1630				6	x	x	x	x					x	x	x	x		007
8	MW-9A	WT	G	12/2/19	1130				6	x	x	x	x					x	x	x	x		008
9	MW-10	WT	G	12/3/19	1340				4		x		x					x			x		009
10	MW-11	WT	G	12/2/19	1440				4		x		x					x			x		010
11	MW-12	WT	G	12/2/19	1530				6	x	x	x	x					x	x	x	x		011
12	MW-13	WT	G	12/2/19	1330				6	x	x	x	x					x	x	x	x		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*6020 Metals: As, Ba, Cd, Cr, Co, Cu, Fe, Pb, Ni, Se, Ag, Thallium, Vn, Zn, Mn	Mark F Pearson / Tetra Tech	12/4/19	1600	Fed Ex, Belgrade, MT		
Three coolers deliver to Pace MN laboratory				CamPace	12/5/19	845

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
0.1 / 0.5 / 0.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mark F Pearson

SIGNATURE of SAMPLER: Mark F Pearson

DATE Signed (MM/DD/YY): 12/4/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Section A — Required Client Information:

Company:	Tetra Tech
Address:	851 Bridger Drive, Suite 6
	Bozeman, MT 59715
Email To:	mark.pearson@tetratech.com
Phone: 406-582-8780	Fax: 406-582-8790
Requested Due Date/TAT:	10 day

Section B — Required Project Information:

Report To:	Mark Pearson
Copy To:	
Purchase Order No.:	
Project Name:	Bozeman Landfill
Project Number:	114-710326E.300

Section C — Invoice Information:

Attention:	Deb Lloyd
Company Name:	(same as Section A)
Address:	
Pace Quote Reference:	
Pace Project Manager:	Beverly Faraday
Pace Profile #:	21198

REGULATORY AGENCY

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MT

Section D — Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 LL VOCs	6020 Metals*	Sulfate, Chloride	353.2 N+N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-15	WT	G	12/2/19	1030				6	x	x	x	x					x	x	x	x		013
2	MW-17	WT	G	12/2/19	1700				5	x		x	x					x	x	x			014
3	MW-18	WT	G	12/3/19	1020				5	x		x	x					x	x	x			015
4	MW-19	WT	G	12/4/19	1150				3				x					x					016
5	MW-20	WT	G	12/3/19	1110				5	x		x	x					x	x	x			017
6	MW-21	WT	G	12/4/19	950				3				x					x					018
7	MW-22	WT	G	12/4/19	1030				3				x					x					019
8	MW-23	WT	G	12/4/19	1110				3				x					x					020
9	MW-24	WT	G	12/3/19	1200				3				x					x					021
10	MW-25	WT	G	12/3/19	1230				3				x					x					022
11	MW-26	WT	G	12/3/19	1300				3				x					x					023
12	MW-27	WT	G	12/4/19	1230				6	x	x	x	x					x	x	x	x		024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*6020 Metals: As, Ba, Cd, Cr, Co, Cu, Fe, Pb, Ni, Se, Ag, Thallium, Vn, Zn, Mn	Mark F Pearson / Tetra Tech	12/4/19	1600	Fed Ex, Belgrade, MT						
Three coolers deliver to Pace MN laboratory				CMA Pace	12/5/19	845	0.1 0.5 0.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mark F Pearson

SIGNATURE of SAMPLER: Mark Pearson

DATE Signed (MM/DD/YY): 12/4/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Mark Pearson
Copy To:	
Purchase Order No.:	
Project Name:	Bozeman Landfill
Project Number:	114-710326E.300

Section C Invoice Information:

Attention:	Deb Lloyd
Company Name:	(same as Section A)
Address:	
Pace Quote Reference:	
Pace Project Manager:	Beverly Faraday
Pace Profile #:	21198

REGULATORY AGENCY

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MT

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 LL VOCs	6020 Metals*	Sulfate, Chloride	353.2 N+N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SHOP WELL	WT	G	12/3/19	1000				3				x						x					025
2	McILHATTEN SEEP	WT	G	12/3/19	1400				4		x		x						x			x		026
3	VALLEY VIEW VET WELL	WT	G	12/3/19	1440				4			x	x						x	x				027
4	DUP-1	WT	G	12/2/19	1340				6	x	x	x	x						x	x	x	x		028
5	DUP-2	WT	G	12/3/19	950				6	x	x	x	x						x	x	x	x		029
6	DUP-3	WT	G	12/3/19	0:00				6	x	x	x	x						x	x	x	x		030
7	TRIP BLANK-1	WT	G	11/4/19	–				2	x									x					031
8	TRIP BLANK-2	WT	G	11/4/19	–				2	x									x					032
9																								
10																								
11																								
12																								

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*6020 Metals: As, Ba, Cd, Cr, Co, Cu, Fe, Pb, Ni, Se, Ag, Thallium, Vn, Zn, Mn Three coolers deliver to Pace MN laboratory	Mark F Pearson / Tetra Tech	12/4/19	1600	Fed Ex, Belgrade, MT Pace	12/05/19	845	0.1 0.5 0.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mark F Pearson

SIGNATURE of SAMPLER: Mark Pearson

DATE Signed (MM/DD/YY): 12/4/19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Nov2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.30**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Tetra Tech

Project #: WO#: 10501501
PM: BEF Due Date: 12/18/19
CLIENT: 11 Tetra-MT

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial **See Exceptions**

Tracking Number: 7771 5331 8132 / 8110 / 7835☒

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☒Other: PB **Temp Blank?** ☒Yes ☐No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 0.1, 0.5, 0.3 °C	**Average Corrected Temp (no temp blank only):** ____ °C ☐See Exceptions ☐1 Container
Correction Factor: +0.0 **Cooler Temp Corrected w/temp blank:** 0.1, 0.5, 0.3 °C	

USDA Regulated Soil: (☒N/A, water sample/Other:________________)
Date/Initials of Person Examining Contents: GNZ 12/05/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other____
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☒Yes ☒Yes	☐No ☐No		8.
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒Water ☐Soil ☐Oil ☐Other	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** Bothe count for McILHATTEN SEEP and MW17☒. don't match COC. Recieved one broken vial on sample MW-26.
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	☐NaOH ☒HNO3 (2-5, 7-8, 11-22) ☒H2SO4 (1-14, 17-18, 20-28) ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒Yes	☐No	☐N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ Res. Chlorine | 0-6 Roll 203619 | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers? Headspace in VOA Vials (greater than 6mm)?	☐Yes ☐Yes	☐No ☐No	☒N/A ☒N/A	13. No headspace **See Exception** ☐
Trip Blank Present? Trip Blank Custody Seals Present?	☒Yes ☒Yes	☐No ☐No	☐N/A ☐N/A	14. Pace Trip Blank Lot # (if purchased): 233659

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: ____________ Date/Time: ____________

Comments/Resolution: ____________

Project Manager Review: [signature] **Date:** 12/5/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: GNZ (3)

Pace Analytical	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.02	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp

Tracking Number/Temperature	
777153318132	0.5
" 7835	0.3
" 7110	-0.1

Other Issues

Issue Type: Broken Sample

Sample ID	Container Type	# of Containers
MW26	VG9H	1

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Intra-Regional Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10501501 **Workorder Name:** 114-710326E.300 Bozeman LF **Owner Received Date:** 12/5/2019 **Due Date:** 12/18/2019

Received at:	**Send To Lab:**
Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (406) 384-0559	Pace Analytical Billings MT 150 N Ninth Street Billings, MT 59101 Phone (406)254-7226

Report To:
Beverly Faraday

18 / 16 = 34

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers BP3S	Preserved Containers BP3U					Requested Analysis EPA 300.0	Requested Analysis EPA 353.2											LAB USE ONLY
1	LF-2	PS	12/3/2019 15:20	10501501001	Water	1							X											
2	LF-3	PS	12/3/2019 15:40	10501501002	Water	1	1					X	X											
3	MW-4	PS	12/2/2019 12:20	10501501003	Water	1	1					X	X											
4	MW-5	PS	12/2/2019 10:00	10501501004	Water	1	1					X	X											
5	MW-6	PS	12/3/2019 09:30	10501501005	Water	1	1					X	X											
6	MW-7A	PS	12/2/2019 13:00	10501501006	Water	1							X											
7	MW-8A	PS	12/2/2019 16:30	10501501007	Water	1	1					X	X											
8	MW-9A	PS	12/2/2019 11:30	10501501008	Water	1	1					X	X											
9	MW-10	PS	12/3/2019 13:40	10501501009	Water	1							X											
10	MW-11	PS	12/2/2019 14:40	10501501010	Water	1							X											
11	MW-12	PS	12/2/2019 15:30	10501501011	Water	1	1					X	X											
12	MW-13	PS	12/2/2019 13:30	10501501012	Water	1	1					X	X											
13	MW-15	PS	12/2/2019 10:30	10501501013	Water	1	1					X	X											
14	MW-17	PS	12/2/2019 17:00	10501501014	Water		1					X												
15	MW-18	PS	12/3/2019 10:20	10501501015	Water		1					X												
16	MW-20	PS	12/3/2019 11:10	10501501017	Water		1					X												
17	MW-27	PS	12/4/2019 12:30	10501501024	Water	1	1					X	X											
18	McILHATTEN SEEP	PS	12/3/2019 14:00	10501501026	Water	1							X											
19	DUP-1	PS	12/2/2019 13:40	10501501028	Water	1	1					X	X											

Intra-Regional Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10501501 **Workorder Name:** 114-710326E.300 Bozeman LF **Owner Received Date:** 12/5/2019 **Due Date:** 12/18/2019

Received at:	Send To Lab:
Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (406) 384-0559	Pace Analytical Billings MT 150 N Ninth Street Billings, MT 59101 Phone (406)254-7226

Report To:
Beverly Faraday

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers						Requested Analysis											LAB USE ONLY
						BP3S	BP3U					EPA 300.0	EPA 353.2										
20	DUP-2	PS	12/3/2019 09:50	10501501029	Water	1	1					X	X										
21	DUP-3	PS	12/3/2019 00:00	10501501030	Water	1	1					X	X										
22																							
23																							
24																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]/Pace	12/6/19 1510		
2				
3	Fed Ex		[illegible]/PAL	12/7/19 0945
4				

Comments

Cooler Temperature on Receipt ____ °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 23Oct2018 Page 1 of 1
	Document No.: F-MT-C-184-Rev.15	Issuing Authority: Pace Montana Quality Office

Sample Condition Upon Receipt

Client Name: P-MN

Project #: 10501501

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 1320 7518 3040

Custody Seal on Cooler/Box Present? ☐ Yes ☐ No Seals Intact? ☐ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 160285052 ☐ OS418-LS Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read: 1.8

Cooler Temp Corrected: 1.8

Date and Initials of Person Examining Contents: 12/7/19 CL

Biological Tissue Frozen? ☐ Yes ☑ No

USDA Regulated Soil ☐ Yes ☑ No

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA? Check maps & Circle State

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests? Note if sediment is visible in the dissolved container.	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☑ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☑ H_2SO_4 ☐ NaOH ☐ HCl ☐ NaOH+ZnAce
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☑ Yes	☐ No	☐ N/A	Sample # 18/18 001-013, ~~017~~ SE 024, 026, 028-030
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☑ No		Initial when completed: SE Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): N/A				

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: KJK Date: 12/9/19

APPENDIX D

DATA REVIEW, VERIFICATION, & VALIDATION REPORT

DATA REVIEW, VERIFICATION, & VALIDATION REPORT

1. INTRODUCTION

General Project Information			
Project Name:	Bozeman Landfill	**Date Validated:**	1/29/2020
Tetra Tech Project Number:	114-710326E	**Data Validated By:**	MF Pearson, Tetra Tech
Sample Start and End Dates:	12/2/2019 – 12/4/2019	**Laboratory Name:**	Pace Analytical
Sample Matrix:	Aqueous	**Laboratory Project ID#:**	10501501
Analytical Parameters:	Dissolved Metals by Method 6020, VOCs by Method 8260 (low), Anions (sulfate and chloride) by Method 300, and Nitrogen (as NO2+NO3) by Method 353.2		
Name & Date of Approved SAP, QAPP, Work Plan, Etc.	Groundwater Monitoring Sampling and Analysis Plan for the Bozeman Landfill. Prepared for City of Bozeman. Prepared by Tetra Tech. Dated November 12, 2015.		

2. LABORATORY METHODS AND SAMPLE HANDLING

Validation Criteria Used:

X Groundwater Monitoring Sampling and Analysis Plan for the Bozeman Landfill. Prepared for City of Bozeman. Prepared by Tetra Tech. Dated November 12, 2015.

X National Functional Guidelines for Organic Superfund Methods Data Review. OLEM 9355.0-136, EPA-540-R-2017-002. Dated January 2017.

X National Functional Guidelines for Inorganic Superfund Methods Data Review. OLEM 9355.0-135, EPA-540-R-2017-001. Dated January 2017.

3. LIST OF SAMPLES VALIDATED IN THIS REPORT

List all samples in the sample delivery group that were validated in this report.

Validated Samples		
Field Sample ID#	**Laboratory Sample ID#**	**Sample Type** (Natural, Duplicate, Field Blank, Etc.)
LF-2	10501501001	Natural
LF-3	10501501002	Natural
MW-4	10501501003	Natural
MW-5	10501501004	Natural
MW-6	10501501005	Natural
MW-7A	10501501006	Natural
MW-8A	10501501007	Natural
MW-9A	10501501008	Natural
MW-10	10501501009	Natural
MW-11	10501501010	Natural
MW-12	10501501011	Natural
MW-13	10501501012	Natural
MW-15	10501501013	Natural
MW-17	10501501014	Natural
MW-18	10501501015	Natural
MW-19	10501501016	Natural
MW-20	10501501017	Natural
MW-21	10501501018	Natural
MW-22	10501501019	Natural

Validated Samples		
Field Sample ID#	**Laboratory Sample ID#**	**Sample Type** (Natural, Duplicate, Field Blank, Etc.)
MW-18	10501501020	Natural
MW-19	10501501021	Natural
MW-20	10501501022	Natural
MW-24	10501501023	Natural
MW-27	10501501024	Natural
Shop Well	10501501025	Natural
McIlhatten Seep	10501501026	Natural
Valley View Vet Well	10501501027	Natural
DUP 1	10501501028	Duplicate of MW-13
DUP 2	10501501029	Duplicate of MW-6
DUP 3	10501501030	Duplicate of LF-3
TRIP BLANK 1	10501501031	Trip blank
TRIP BLANK 2	10501501032	Trip blank

4. FIELD COMPLIANCE WITH PROJECT REQUIREMENTS

Were all the required samples collected as specified in the SAP/QAPP, and field and analytical methods? Discuss.

Yes, all samples were collected as per the SAP.

5. Data Qualifiers

Data qualifiers used for this project are those in the NFG and are listed below.

Data Evaluation Qualifiers	
Data Qualifier	**Qualifier Description** *(as per USEPA 2018 PFAS Data Review and Validation Guidelines)*
U	The analyte was analyzed for but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
J	The analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
J+	The result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside control limits.
J-	The result is an estimated quantity that may be biased low due to associated laboratory QA/QC result being outside control limits.
B	The analyte has been detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Laboratory-specific data qualifiers are provided in each individual laboratory analytical report. Laboratory qualifiers are for information purposes and do not necessarily signify that the data requires qualification.

6. LABORATORY NARRATIVE, CHAIN-OF-CUSTODY, AND SAMPLE RECEIPT CHECKLIST

Was a laboratory narrative provided and were there any non-conformance issues with the analytical data? Identify and discuss.

The laboratory provided a general narrative that stated the results reported in the report conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Pace listed multiple QC deviations or anomalies. These include:

Continuing Calibrations

- QC Batch: 648965

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

• LCS (Lab ID: 3490919)

• 2-Propanol • MS (Lab ID: 3490920)

• 2-Propanol • MSD (Lab ID: 3490921)

• 2-Propanol

LCS

- QC Batch: 648965

L3: Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

• LCS (Lab ID: 3490919)

• 2-Propanol

MS/MSDs

- QC Batch: 650172 A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10501501012,10502724001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MS (Lab ID: 3496593)

• Chloride

Method Blank

- QC Batch: 654638

B: Analyte was detected in the associated method blank.

• BLANK for HBN 654638 [MPRP/999 (Lab ID: 3519074)

• Thallium, Dissolved

Analyte Comments

- QC Batch: 650172 E: Analyte concentration exceeded the calibration range. The reported result is estimated.

• MS (Lab ID: 3496593)

• Chloride

- QC Batch: 650170 E: Analyte concentration exceeded the calibration range. The reported result is estimated.
- MS (Lab ID: 3496747)
- Nitrogen, NO2 plus NO3

Sections 7 and 8 discuss any required qualifications.

Were sample Chain-of-Custody (COC) forms complete? Describe.

Yes. All required areas of the COC were completed and the forms signed by field and laboratory personnel with the following exceptions: 1) Field personnel omitted checking the Requested Analysis for metals for the McIlhatten Seep sample. Therefore, field personnel contacted the laboratory shortly after the samples had been received to request dissolved metals analysis of this sample. 2) Field personnel requested 6020 Metals in the "Requested Analysis" but did not affirm that the metals were to be analyzed from samples that had been field filtered. It was assumed that the laboratory already knew that these water samples were to be analyzed as dissolved metals. The laboratory revised the total metals designation to dissolved metals designation. However, in the lab's first revision, they mistakenly put digestion results instead of the correct and final results. Another request was made for correction of the results and to change the units of measurement, for metals results, from micrograms per liter (µg/L) to milligrams per liter (mg/L) , hence reporting as Dissolved Metals in milligrams per liter in all the samples scheduled for metals analysis except Valley View Vet Well sample which had not been filtered and so, was reported as total recoverable metals. This caused the laboratory to revise its report two more times for a total of three times.

Were any issues or discrepancies noted on the Sample Receipt Checklist (a.k.a. Non-Conformance Form)? Were samples received in a sealed cooler, good condition, at proper temperatures? Identify and discuss.

The Sample Condition Upon Receipt Form indicated the samples were received in good condition and at the correct temperature. All VOCs samples included three VOA vials. The MW-26 sample was received with one of the three VOA vials broken, that is assumed to have occurred during shipment. No headspace was observed by the laboratory in any of the VOA vials of the sample set.

Were the requested analytical methods in compliance with project requirements (i.e., QAPP, SAP, etc.)? Explain and, if not in compliance, discuss how this affects the data.

Yes. The water samples were analyzed for metals reported as dissolved (analytical method 6020), VOCs (analytical method 8260B), chloride and sulfate (analytical method 300.0), and nitrogen as NO2+NO3 (analytical method 353.2).

7. LABORATORY COMPLIANCE WITH PROJECT REQUIREMENTS

Were samples analyzed within method-specified or technical holding times? Explain any exceptions and how this may affect the results.

Yes. Samples were collected December 2 to 4, 2019 and analyzed within holding times for metals, VOCs, anions, and nitrogen. Samples for metals analysis were analyzed on December 11 and 13, 2019. Samples for VOC analysis were analyzed between December 6 and 9, 2019. Samples for Anion analysis were analyzed on December 17 and 18, 2019. Samples for nitrogen analysis were analyzed on December 16 and 17, 2019.

Do the laboratory reports include all constituents requested to be analyzed on the CoC or under the QAPP, SAP, or other applicable document? Explain.

Yes. Samples were analyzed as required as per the SAP.

Were reported units appropriate for the associated sample matrix/matrices and method(s) of analyses? Explain.

Yes. The samples were analyzed by the methods specified in the SAP and units were reported for metals, anions, and nitrogen as milligrams per liter (mg/L) and for VOCs as micrograms per liter (ug/L). This was for comparison with standards/screening levels and previous results.

Were detection limits reported by the laboratory in accordance with the project requirements? Discuss and list.

All sample results were reported to the method detection limit. Several constituents including manganese, chloride, sulfate, and nitrogen required dilutions as indicated in the laboratory report. Some of these dilutions were up to 20 and even up to 50 times (sample MW-8A nitrogen). Reporting limits were adjusted accordingly. No qualification is required.

Results qualified by the laboratory based on the laboratory reporting limit. Discuss, as needed.

Results were qualified by the laboratory based on detection of concentrations between the MDL and PQL. These were qualified with a 'J'. Results where the analyte was detected in the associated method blank were qualified with a 'B'. Other data qualifiers are shown in the above Data Evaluation Qualifiers Table. The results are listed in the table below.

Sample	Analytical Parameter	Result	Qualifier
LF-2	cis-1,2-Dichloroethene	0.26 µg/L	J
MW-4	Zinc	0.0027 mg/L	J
MW-4	1,1-Dichloroethane	0.26 µg/L	J
MW-4	Trichloroethene	0.38 µg/L	J
MW-4	Copper	0.00043 mg/L	J
MW-4	Zinc	0.0028 mg/L	J
MW-6	Copper	0.00046 mg/L	J
MW-6	1,4-Dichlorobenzene	0.23 µg/L	J
MW-6	Benzene	0.19 µg/L	J
MW-6	Chloroethane	0.93 µg/L	J
MW-6	Tetrachloroethene	0.31 µg/L	J
MW-6	Trichloroethene	0.26 µg/L	J
MW-7A	Benzene	0.19 µg/L	J
MW-7A	Trichlorofluoromethane	0.44 µg/L	J
MW-8A	Cobalt	0.000090 mg/L	J
MW-8A	Copper	0.00081 mg/L	J
MW-9A	Cadmium	0.000032 mg/L	J
MW-9A	Copper	0.00053 mg/L	J
MW-9A	Selenium	0.00014 mg/L	J
MW-9A	Thallium	0.000090 mg/L	J,B
MW-9A	1,1-Dichloroethane	0.36 µg/L	J
MW-10	cis-1,2-Dichloroethene	0.27 µg/L	J
MW-10	Trichloroethene	0.25 µg/L	J
MW-12	Copper	0.00050 mg/L	J
MW-12	Lead	0.000050 mg/L	J
MW-12	Thallium	0.000081 mg/L	J,B
MW-12	1,2-Dichloropropane	0.40 µg/L	J
MW-12	Nitrogen	0.012 mg/L	J
MW-13	Arsenic	0.00043	J
MW-13	Copper	0.00055 mg/L	J
MW-13	Iron	0.038 mg/L	J
MW-13	Thallium	0.000073 mg/L	J
MW-13	1,2-Dichloropropane	0.29 µg/L	J
MW-13	Chlorobenzene	0.28 µg/L	J
MW-13	Dichlorodifluoromethane	0.65 µg/L	J
MW-13	Trichloroethene	0.26 µg/L	J
MW-13	Chloride	45.2 mg/L	M1
MW-15	Arsenic	0.00039 mg/L	J
MW-15	Selenium	0.00018 mg/L	J
MW-15	Thallium	0.000058 mg/L	J,B
MW-17	Copper	0.00052 mg/L	J
MW-17	Nickel	0.00037 mg/L	J
MW-17	Thallium	0.000050 mg/L	J,B
MW-17	1,2-Dichloropropane	1.5 µg/L	J
MW-18	Chromium	0.00045 mg/L	J
MW-18	Selenium	0.00040 mg/L	J
MW-18	Thallium	<0.000047 mg/L	B
MW-18	Benzene	0.45 µg/L	J
MW-18	Chlorobenzene	0.33 µg/L	J
MW-18	Tetrahydrofuran	8.8 µg/L	J
MW-18	Toluene	0.28 µg/L	J
MW-19	1,2,4-Trimethylbenzene	0.31 µg/L	J
MW-19	Benzene	0.11 µg/L	J
MW-20	Arsenic	0.00044 mg/L	J
MW-20	Cadmium	0.000032 mg/L	J
MW-20	Nickel	0.00020 mg/L	J
MW-20	Thallium	0.000049 mg/L	J,B
MW-20	Vanadium	0.00072 mg/L	J
MW-20	Trichloroethene	0.16 µg/L	J
MW-21	Toluene	0.13 µg/L	J

Sample	Analytical Parameter	Result	Qualifier
MW-22	Benzene	0.13 µg/L	J
MW-22	Toluene	0.27 µg/L	J
MW-23	1,2,4-Trimethylbenzene	0.21 µg/L	J
MW-23	Benzene	0.20 µg/L	J
Shop Well	Trichlorofluoromethane	0.68 µg/L	J
McIlhatten Seep	Copper	0.00090 mg/L	J
McIlhatten Seep	Silver	0.00010 mg/L	J
DUP1	Arsenic	0.00050 mg/L	J
DUP1	Copper	0.00076 mg/L	J
DUP1	Lead	0.000058 mg/L	J
DUP1	Thallium	0.000075 mg/L	J,B
DUP1	Zinc	0.0028 mg/L	J
DUP1	1,2-Dichloropropane	0.27 µg/L	J
DUP1	Benzene	0.50 µg/L	J
DUP1	Chlorobenzene	0.26 µg/L	J
DUP1	Trichloroethene	0.25 µg/L	J
DUP1	trans-1,2-Dichloroethene	0.14 µg/L	J
DUP1	Nitrogen	0.012 mg/L	J
DUP2	Cadmium	0.000034 mg/L	J
DUP2	Selenium	0.00016 mg/L	J
DUP2	Thallium	0.000058 mg/L	J,B
DUP2	1,4-Dichlorobenzene	0.24 µg/L	J
DUP2	Benzene	0.20 µg/L	J
DUP2	Tetrachloroethene	0.48 µg/L	J
DUP2	Trichloroethene	0.30 µg/L	J
DUP3	Thallium	0.000048 mg/L	J,B

8. LABORATORY QA/QC

8a. Continuing Calibration Verification (CCV) Standard

Was there indication from the laboratory that the initial or CCV results were within acceptable limits? Explain and include discussion on how any out-of-control results affect the accuracy of the data.

- QC Batch: 648965

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

• LCS (Lab ID: 3490919)

• 2-Propanol

• MS (Lab ID: 3490920)

• 2-Propanol

• MSD (Lab ID: 3490921)

• 2-Propanol

2-Propanol was not detected in the sample set, therefore, no qualification was required.

8b. Laboratory Control Samples (LCSs)

Was the reference material used for the laboratory control standard (LCSs) the correct matrix and concentration? Explain and include a discussion on how any matrix differences affects the accuracy of the data.

Yes, all LCSs were of aqueous matrix consistent with analytical media analyzed.

Was the total number of LCSs analyzed equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. Six LCSs were analyzed for VOC samples, two for sulfate and chloride samples, and three for nitrogen samples. No LCSs were analyzed for metals.

Were LCSs prepared the same way as the associated samples? Explain and include a discussion of how any deviations affect the accuracy of the data.

Yes, the samples were prepared the same way as the associated samples.

Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory QC limits? Explain and discuss on how any out-of-control results affect the accuracy of the data.

All LCS %Rs and RPDs were within control limits with the following exceptions.

- QC Batch: 648965

  L3: Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

  • LCS (Lab ID: 3490919)

  • 2-Propanol

No qualifications were required as all associated results with the above were non-detect.

8c. Laboratory Blank Samples

Was the total number of method blank samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. Three method blanks were analyzed for metal samples, three method blanks were analyzed for VOC samples, two method blanks were analyzed for sulfate and chloride samples, and three method blanks were analyzed for nitrogen samples.

Were laboratory blank samples free of analyte contamination? Explain.

Yes. All method blanks were free of analyte contamination except the following:

- QC Batch: 654638

  B: Analyte was detected in the associated method blank.

  • BLANK for HBN 654638 [MPRP/999 (Lab ID: 3519074)

  • Thallium, Dissolved

  Detected Thallium results in the sample set were between the MDL and PQL, hence qualified as estimated. Most of these were also qualified with a B as described above. Non-detect Thallium results were not qualified.

8d. Matrix Spike / Matrix Spike Duplicates

What project-specific samples were used to prepare the MS and MSD samples?

Non-project-specific samples included: 10505394001, 10501579001, 10502724001, 10501255001, 10501810002,

Project-specific samples included (Lab ID nos.): 10501501026, 10501501003, 10501501002, 10501501019, 10501501012, 10501501001, 10501501009

Was the total number of MS samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. A total of twelve MS/MSDs were analyzed. Two or more MS/MSDs was analyzed per analytical method, based on the number of samples analyzed.

Were MS percent recoveries and all MS/MSD relative percent differences (RPDs) within data validation or laboratory QC limits? Explain and include a discussion on how this affects the data.

All %Rs were within control limits with the following exceptions:

- QC Batch: 650172

  A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10501501012,10502724001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 3496593)
- Chloride

No qualifications were made based on MS/MSD data alone, as all associated LCS/LCSD recoveries and RPDs were within control limits.

8e. Laboratory Duplicates

Were laboratory duplicate RPD values within laboratory-specified limits? Explain and include discussion of how this affects the data.

Yes. Sulfate and chloride duplicate results were within control limits. Nitrogen duplicate results were within control limits. No qualifications were made.

8f. Surrogates

Were surrogate recoveries within laboratory QC limits? Explain and include discussion on how this affects the data.

All surrogate recoveries were within control limits.

9. FIELD QA/QC

9a. Trip and Field Blanks

Were the number of equipment, trip, or field blanks collected equal to at least 10% of the total number of samples, or as required by the project requirements, QAPP, or SAP? Explain and include how this affects the data.

Two trip blanks were analyzed.

Were the trip blank, field blank, and/or equipment blank samples free of analyte contamination? Explain and include discussion of how this affects the data.

Yes. All blank results were non-detect. No qualification was required.

9b. Field Duplicates

Were the field duplicates collected as required by the project requirements, QAPP or SAP? Include a table of duplicate samples. Explain and include discussion of how this affects the data.

Yes. Three field duplicates were analyzed:

Duplicate	Natural Sample
DUP 1	MW-13
DUP 2	MW-6
DUP 3	LF-3

Were field duplicate RPD values within data validation QC limits? Explain and include discuss of how this affects the data.

RPDs greater than 20% for results <5x the reporting limit were not qualified. All field duplicate RPDs were within control limits or did not require qualification.

10. OTHER

Did EPA or other entities collect split samples? If so, explain how those results compare to the natural sample.

None.

Other comments or observations.

None.

11. SUMMARY OF QUALIFIED DATA

The sample data qualified in this data validation effort is presented in the table in Section 7 above. The data qualifier is a 'J' or estimated concentration which is the concentration between the MDL and PQL. There is also a 'B' qualifier where estimated concentrations of Thallium were detected in the sample set due to this analyte being detected in the method blank. Chloride in sample MW-13 also has a 'M1' qualifier due to the MS exceeding QC limits for this analyte.

12. DEVIATIONS FROM THE QAPP

List and discuss deviations from the QAPP identified during this review.

- Incomplete COC, as described in Section 6, is a deviation from the SAP. However, this was corrected in subsequent communication with the laboratory.

13. ACCEPTABILITY AND USABILITY OF THE DATA

A review of the chain of custody forms and laboratory case narratives indicate that proper chain of custody was maintained. The appropriate preparation and analysis methods were performed on the samples based on the intended use of the data. The cooler temperatures were measured upon laboratory receipt and were within control limits. All samples were received preserved, in intact, and in good condition. One VOA vial broke but there were two others from the same well that could be used.

All samples were analyzed within method holding time requirements. Laboratory quality control (QC) sample analyses performed for each analytical method are summarized as part of the laboratory analytical package.

The following Stage 2A verification and manual validation checks were performed as part of this project:

1. Requested methods were performed;
2. Method dates for handling, preparation and analysis were present, as appropriate;
3. Sample-related QC data and QC acceptance criteria were provided in the laboratory report and linked to the project samples including the field QC samples (trip blank);
4. Requested spike analytes were added, as appropriate;
5. Sample holding times were evaluated;
6. Frequency of QC samples was checked and considered appropriate; and
7. Sample results were evaluated by comparing holding times and sample-related QC data to EPA and project data validation guidelines.

Precision

Precision is the measure of agreement among individual measurements of the same property under similar conditions. Precision for this project has been expressed in terms of the relative percent difference (RPD) between two samples. Duplicate samples can be evaluated quantitatively for precision only when contaminants are detected in both the sample and the duplicate. Duplicates with RPDs within the control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviations from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the detection limits.

Precision was evaluated for this project by comparing field duplicate results, laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD results, and matrix spike/matrix spike duplicate (MS/MSD) RPD results for project samples. Project-specific MS/MSDs were analyzed by the laboratory. However, if the laboratory duplicate or MS/MSD analysis was performed by the laboratory on samples for another client's project within the same method batch, any qualifiers applied to the data are not applicable to this project's samples. This is not the case in the December 2019 sample set.

All LCS/LCSD, laboratory duplicate, field duplicates, and MS/MSD RPDs for the sample set were within the QC limits or did not require qualification.

Accuracy

The assessment of accuracy is evaluated by comparing the percent recoveries (%R) computed from the known concentration of analyte spikes and their recovered concentrations versus the analytical method acceptance criteria. Spike recoveries provide an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits. Accuracy was assessed using surrogate recovery data, LCS/LCSD recovery data, and MS/MSD recovery data for project samples. The LCS/LCSD with exception noted above for 2-propanol, were within control

limits. The MS/MSD with exeption noted above for chloride, were within control limits. Surrogate recoveries, and internal standard response and retention times were within control limits.

Representativeness

Representativeness of the environmental sample analytical data was assessed by evaluating holding times, trip blank, and laboratory method blank results.

- Holding Times. All samples were analyzed within the method-required preparation and analytical holding times.
- Trip blanks were non-detect. No other blanks were collected.
- Laboratory method blanks were free of contamination or did not require qualification with the exception of Thallium having been detected as noted above.

Comparability

All samples were collected and handled using industry standard procedures and analyzed using appropriate EPA analytical methods. Sample results were reported in appropriate units. The analytical methods are considered acceptable for generating analytical data for the purpose of this project.

Completeness

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The data collected during this project are considered 100 percent complete. The overall data quality objective for completeness for the sampling events is >90%.

Sensitivity

Reporting limits and method detection limits were below the screening levels, with exception of those reporting limits that were elevated due to sample matrix or dilution requirements. When a reporting limit exceeded the screening level, the corresponding MDL was evaluated. Data with MDLs below the screening levels required no further evaluation. If a compound was detected below the PQL, but above the MDL, the laboratory qualified the value as estimated and assigned a “J” qualifier. These laboratory-assigned “J” qualified results are considered estimated results as noted in the table above.

The laboratory assigned notations/qualifiers are often for informational purposes. These notations/qualifiers do not necessarily indicate that the results should be considered estimated but may help in evaluating whether results should be considered estimated through this data validation effort. Howerver, exceptions include those samples that were specified by the laboratory to be estimated due to issues or concerns identified within the data package. There are no issues or concerns in this data package.

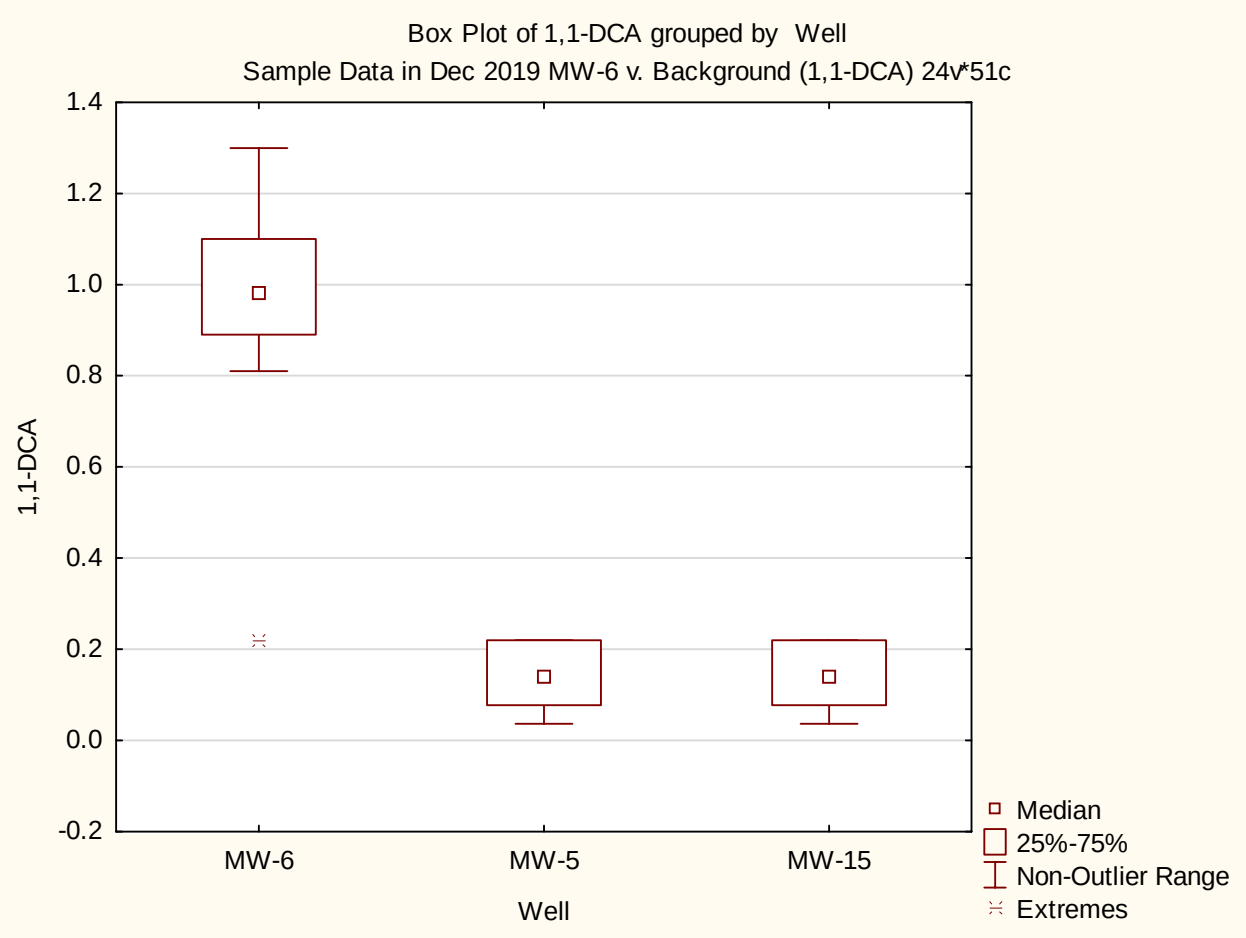
Summary

Overall the analytical data are considered acceptable and have met the quality control and quality assurance objectives and goals of this project. No data were rejected. All results, as qualified, are considered usable for meeting project objectives. Qualifications made during this project are discussed above.

APPENDIX E

STATISTICAL EVALUATION DATA AND WORKSHEETS

MW-6 v. Background
1,1-Dichloroethane

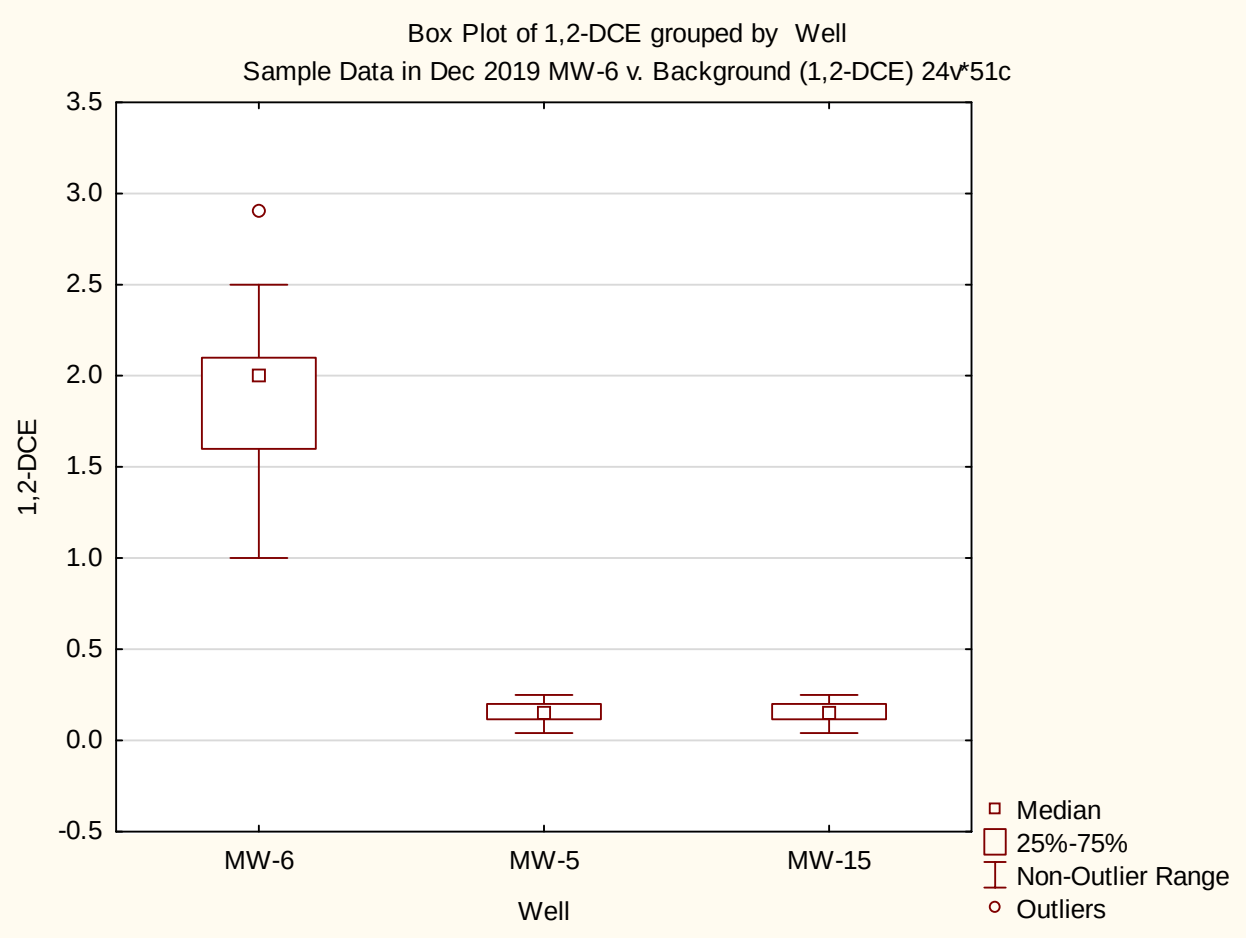


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. Background (1,1-DCA))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-6 (1,1-DCA)	17	0.979412	0.980000	0.220000	1.300000	0.251905
MW-5 (1,1-DCA)	17	0.127176	0.130000	0.036000	0.220000	0.070569
MW-15 (1,1-DCA)	17	0.127176	0.130000	0.036000	0.220000	0.070569

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (1,1-DCA)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-5	2*1sided exact p
1,1-DCA	439.5000	155.5000	2.500000	4.873760	0.000001	4.893991	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (1,1-DCA)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-15	2*1sided exact p
1,1-DCA	439.5000	155.5000	2.500000	4.873760	0.000001	4.893991	0.000001	17	17	0.000000

MW-6 v. Background
cis-1,2-Dichloroethene

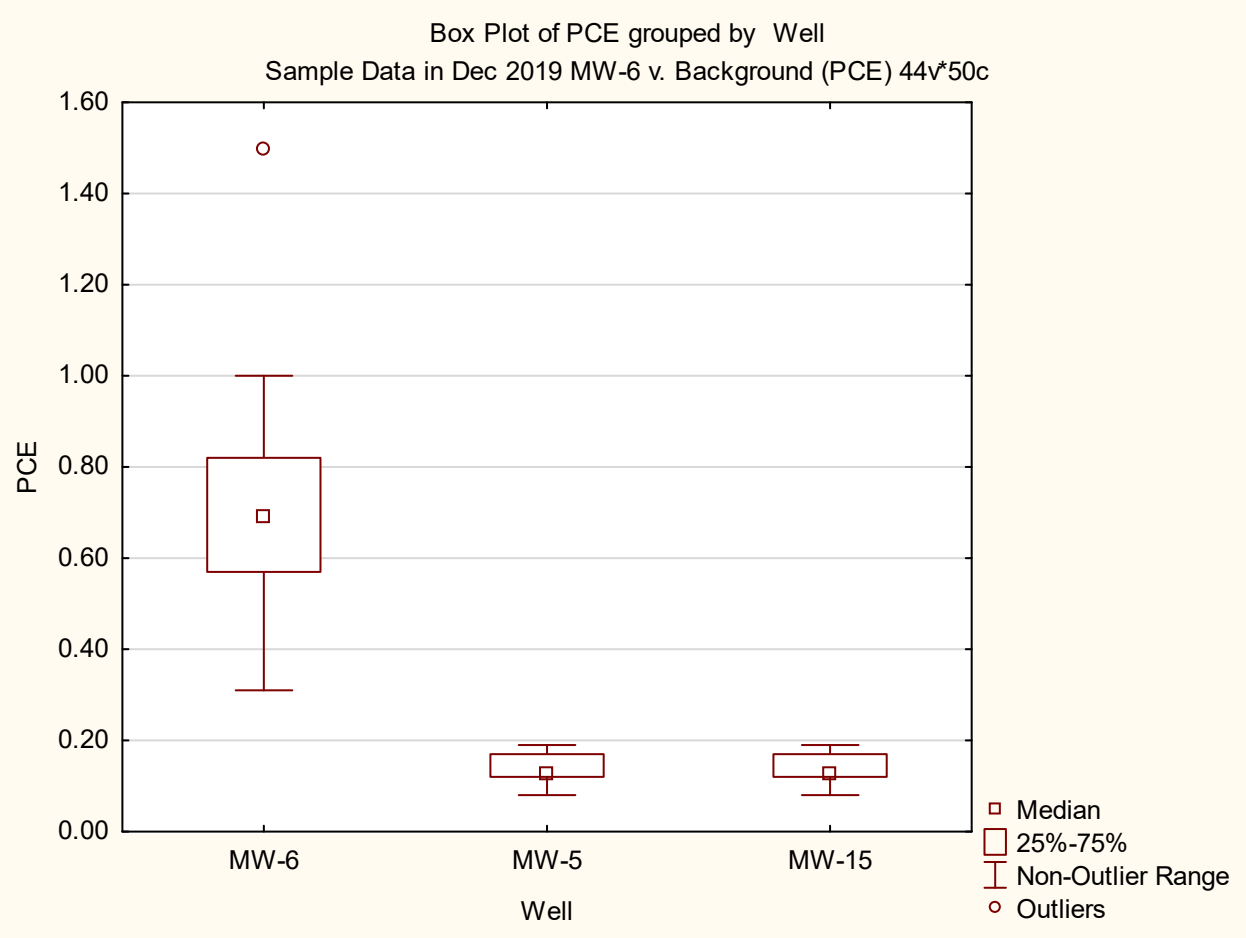


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. Background (1,2-DCE))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-6 (1,2-DCE)	17	1.929412	2.000000	1.000000	2.900000	0.472711
MW-5 (1,2-DCE)	17	0.139118	0.120000	0.040000	0.250000	0.067967
MW-15 (1,2-DCE)	17	0.139118	0.120000	0.040000	0.250000	0.067967

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (1,2-DCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-5	2*1sided exact p
1,2-DCE	442.0000	153.0000	0.00	4.959869	0.000001	4.974712	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (1,2-DCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-15	2*1sided exact p
1,2-DCE	442.0000	153.0000	0.00	4.959869	0.000001	4.974712	0.000001	17	17	0.000000

MW-6 v. Background
Tetrachloroethene (PCE)

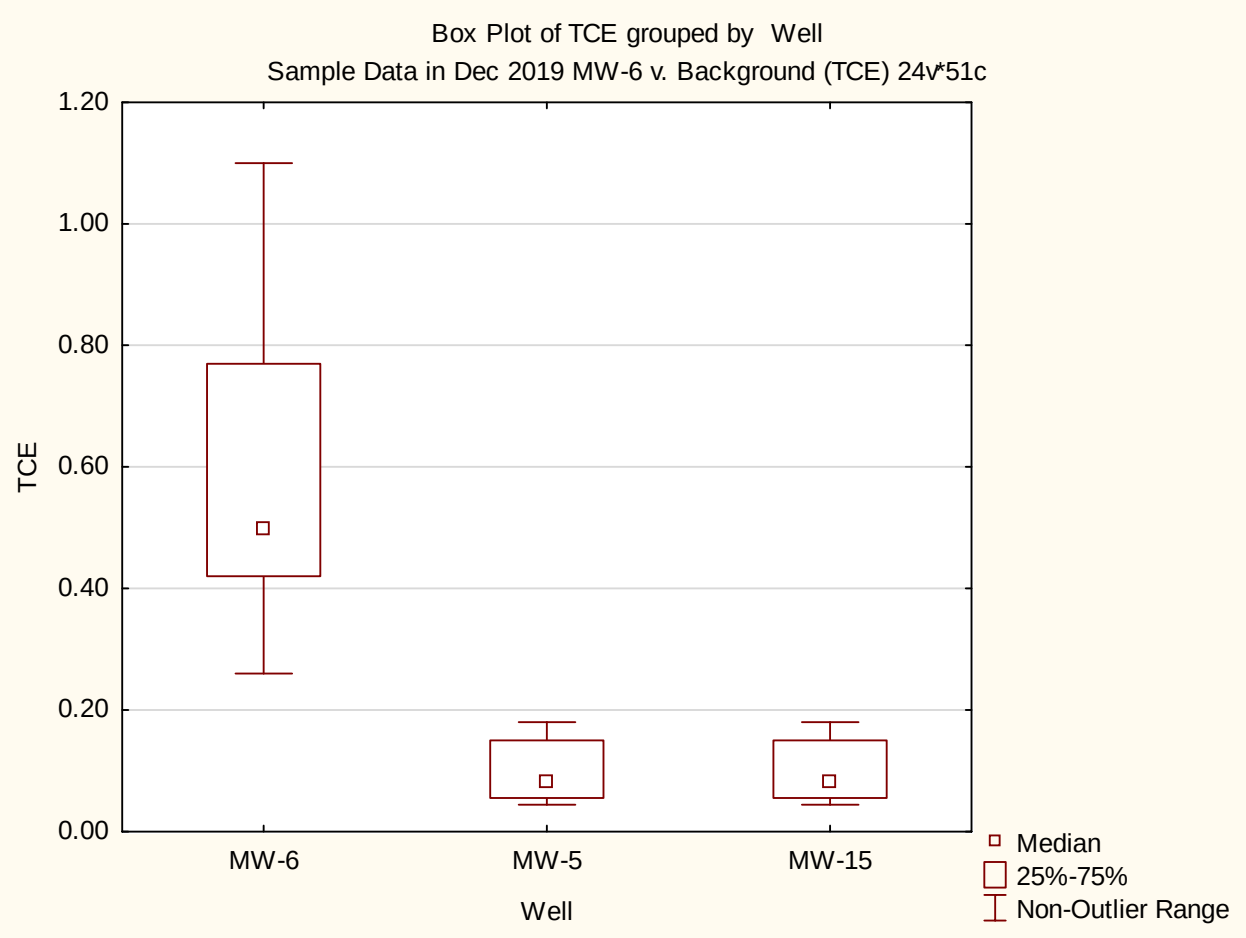


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. Background (PCE))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-6 (PCE)	17	0.725294	0.690000	0.310000	1.500000	0.277672
MW-5 (PCE)	17	0.140235	0.130000	0.080000	0.190000	0.039453
MW-15 (PCE)	17	0.140235	0.130000	0.080000	0.190000	0.039453

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (PCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-5	2*1sided exact p
PCE	442.0000	153.0000	0.00	4.959869	0.000001	4.967084	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (PCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-15	2*1sided exact p
PCE	442.0000	153.0000	0.00	4.959869	0.000001	4.968606	0.000001	17	17	0.000000

MW-6 v. Background
Trichloroethene (TCE)

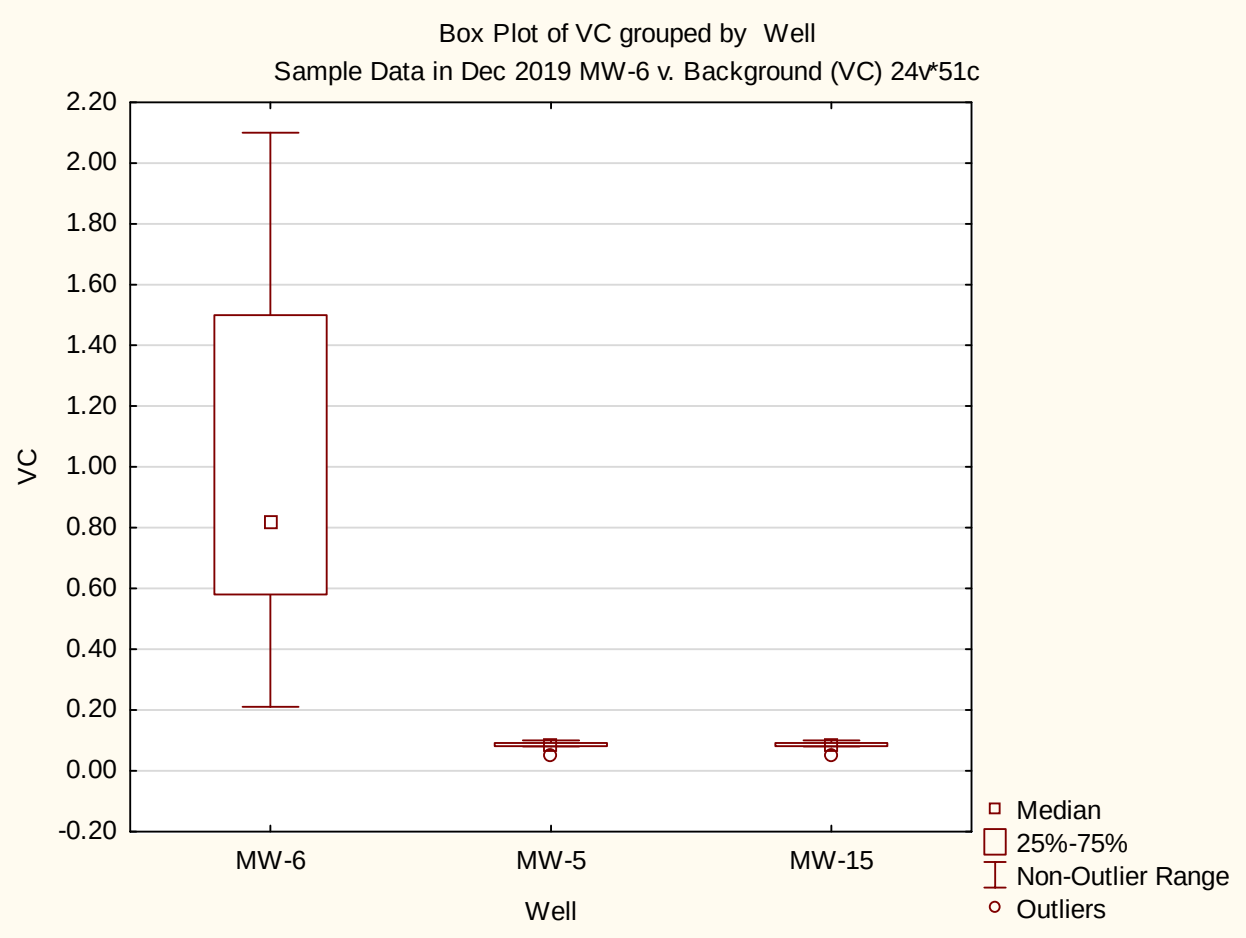


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. Background (TCE))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-6 (TCE)	17	0.566471	0.500000	0.260000	1.100000	0.238116
MW-5 (TCE)	17	0.102412	0.084000	0.044000	0.180000	0.048192
MW-15 (TCE)	17	0.102412	0.084000	0.044000	0.180000	0.048192

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (TCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-5	2*1sided exact p
TCE	442.0000	153.0000	0.00	4.959869	0.000001	4.967084	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (TCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-15	2*1sided exact p
TCE	442.0000	153.0000	0.00	4.959869	0.000001	4.967084	0.000001	17	17	0.000000

MW-6 v. Background
Vinyl Chloride

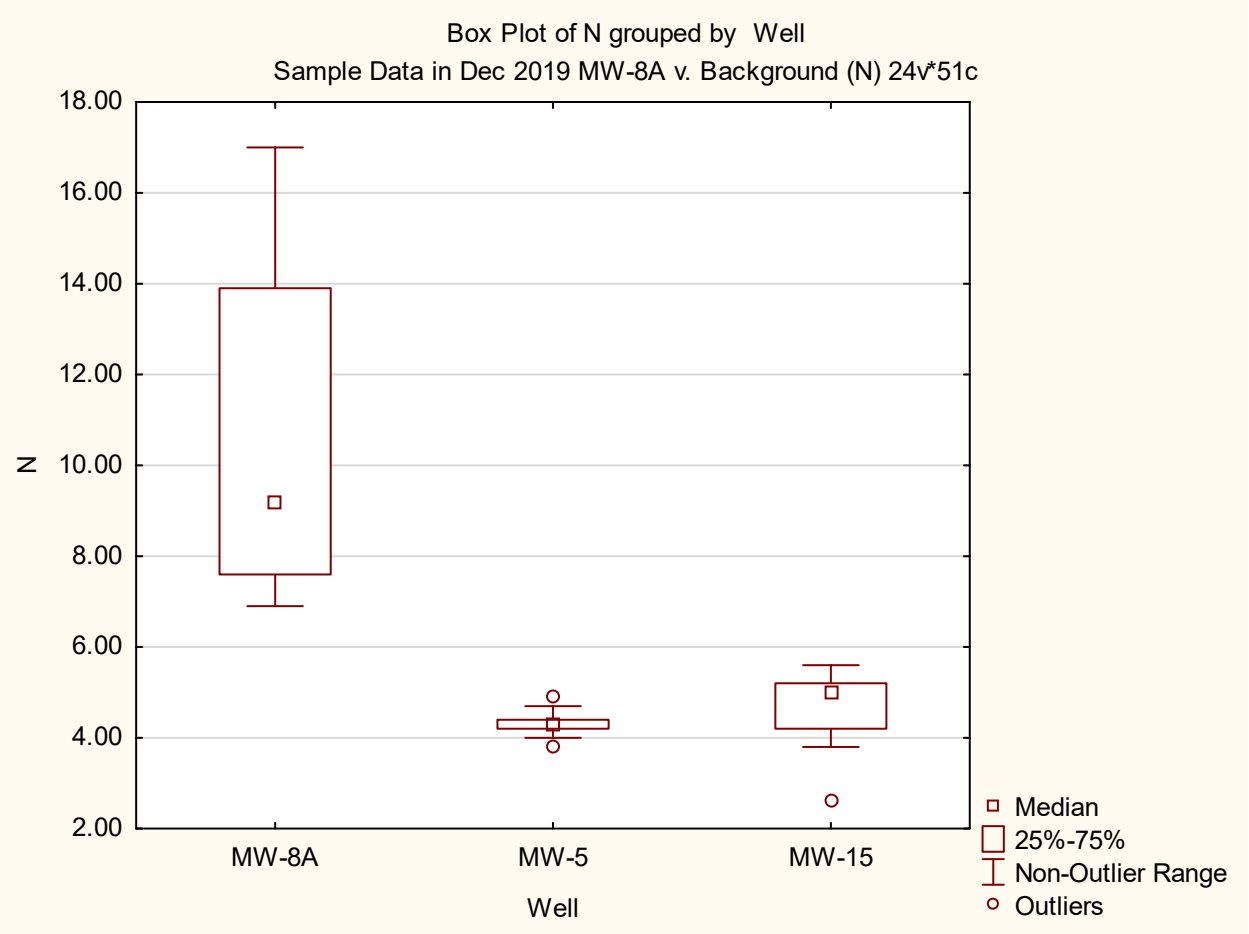


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. Background (VC))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-6 (VC)	17	0.991765	0.820000	0.210000	2.100000	0.580003
MW-5 (VC)	17	0.085706	0.082000	0.050000	0.100000	0.011826
MW-15 (VC)	17	0.085706	0.082000	0.050000	0.100000	0.011826

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (VC)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-5	2*1sided exact p
VC	442.0000	153.0000	0.00	4.959869	0.000001	4.967464	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-6 v. Background (VC)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-6	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-6	Valid N MW-15	2*1sided exact p
VC	442.0000	153.0000	0.00	4.959869	0.000001	4.967464	0.000001	17	17	0.000000

MW-8A v. Background
Nitrogen, NO2 + NO3

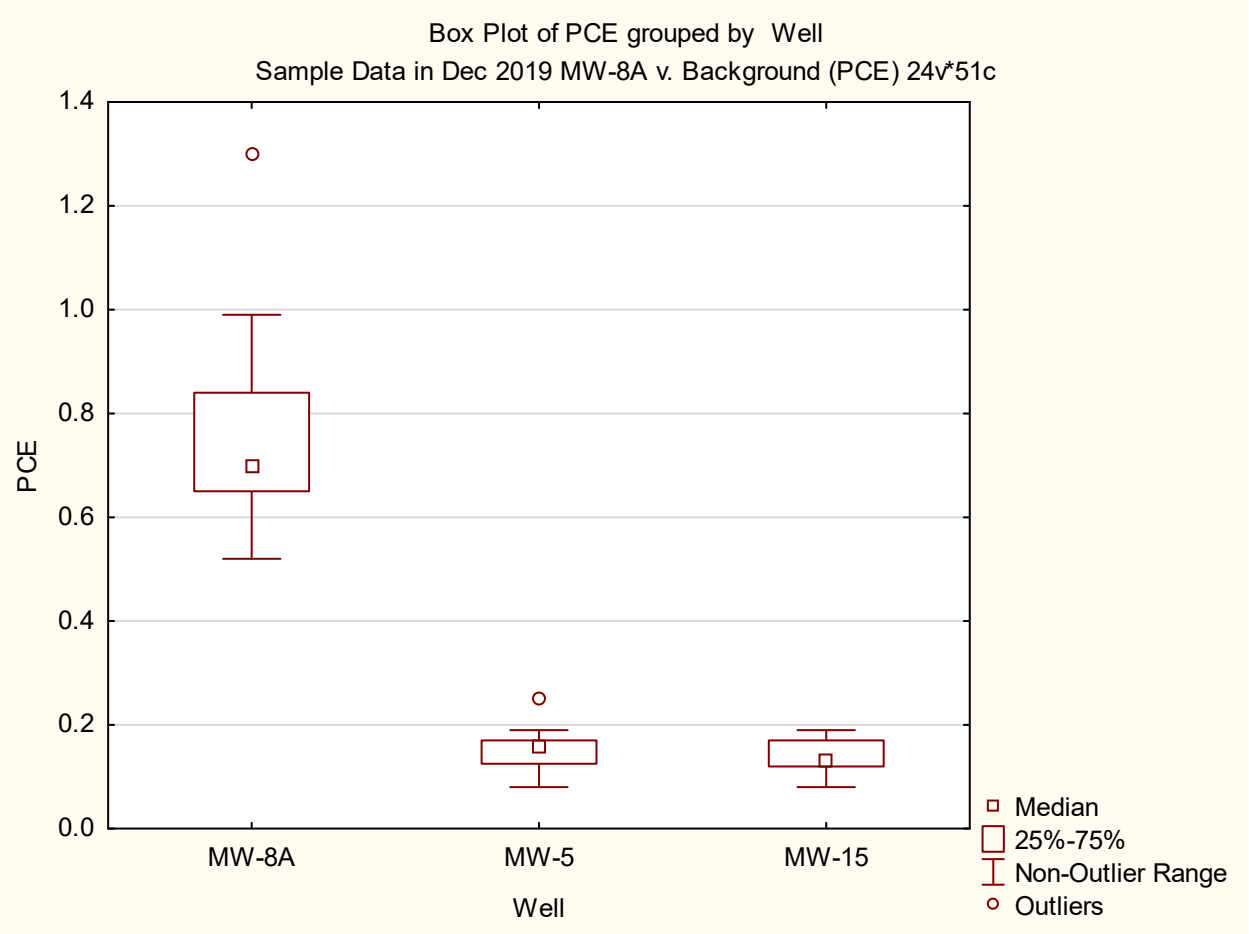


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-8A v. Background (N))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-8A (N)	17	10.90588	9.200000	6.900000	17.00000	3.708347
MW-5 (N)	17	4.32353	4.300000	3.800000	4.90000	0.256246
MW-15 (N)	17	4.69412	5.000000	2.600000	5.60000	0.760321

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (N)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-5	2*1sided exact p
N	442.0000	153.0000	0.00	4.959869	0.000001	4.969368	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (N)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-15	2*1sided exact p
N	442.0000	153.0000	0.00	4.959869	0.000001	4.964042	0.000001	17	17	0.000000

MW-8A v. Background
Tetrachloroethene (PCE)

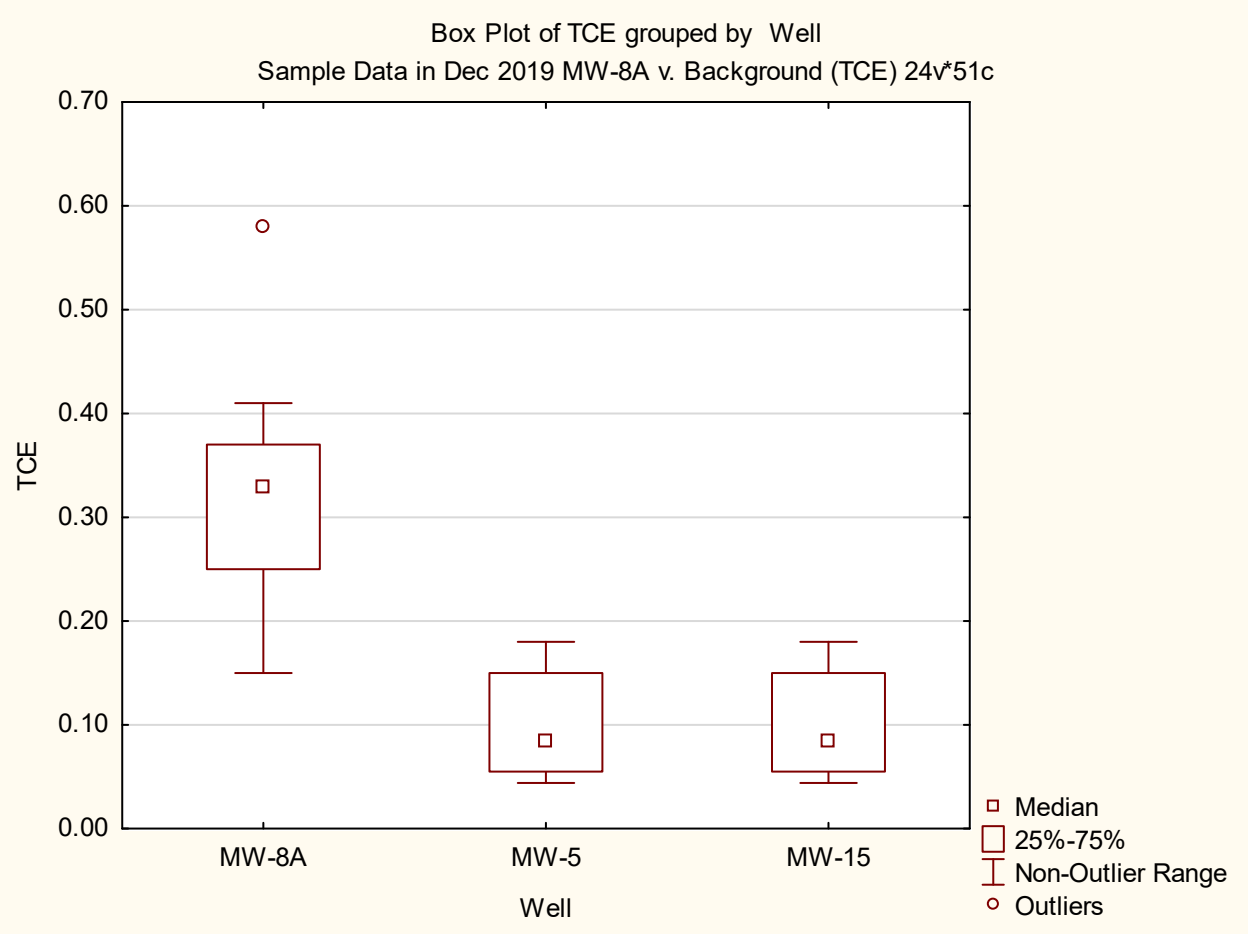


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-8A v. Background (PCE))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-8A (PCE)	17	0.770588	0.700000	0.520000	1.300000	0.189191
MW-5 (PCE)	17	0.140235	0.130000	0.080000	0.190000	0.039453
MW-15 (PCE)	17	0.140235	0.130000	0.080000	0.190000	0.039453

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (PCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-5	2*1sided exact p
PCE	442.0000	153.0000	0.00	4.959869	0.000001	4.967845	0.000001	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (PCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-15	2*1sided exact p
PCE	442.0000	153.0000	0.00	4.959869	0.000001	4.968987	0.000001	17	17	0.000000

MW-8A v. Background
Trichloroethene (TCE)

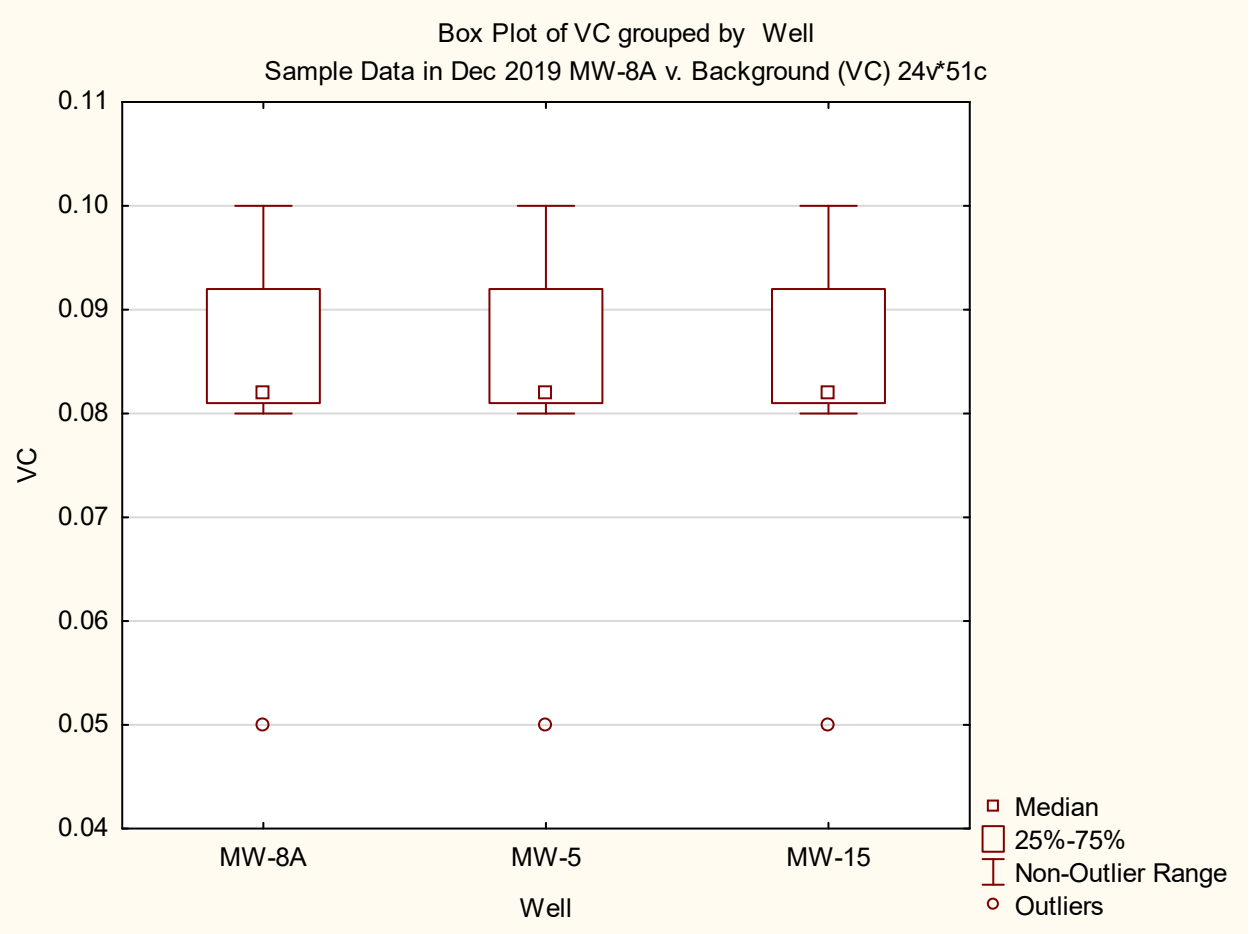


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-8A v. Background (TCE))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-8A (TCE)	17	0.312941	0.330000	0.150000	0.580000	0.110270
MW-5 (TCE)	17	0.103000	0.084000	0.044000	0.180000	0.047701
MW-15 (TCE)	17	0.103000	0.084000	0.044000	0.180000	0.047701

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (TCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-5	2*1sided exact p
TCE	433.0000	162.0000	9.000000	4.649877	0.000003	4.672419	0.000003	17	17	0.000000

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (TCE)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-15	2*1sided exact p
TCE	433.0000	162.0000	9.000000	4.649877	0.000003	4.672419	0.000003	17	17	0.000000

MW-8A v. Background
Vinyl Chloride

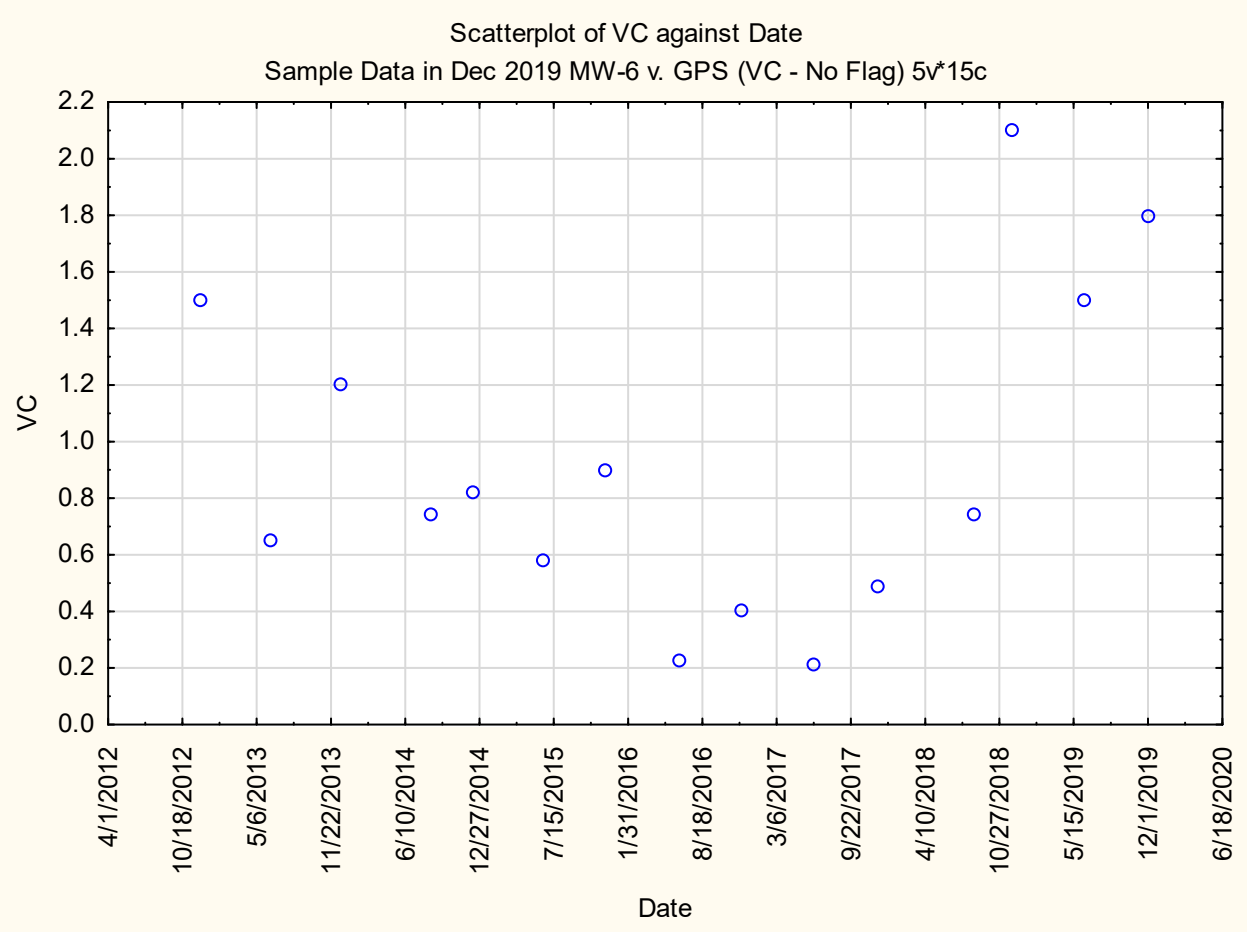


Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-8A v. Background (VC))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
MW-8A (VC)	17	0.085706	0.082000	0.050000	0.100000	0.011826
MW-5 (VC)	17	0.085706	0.082000	0.050000	0.100000	0.011826
MW-15 (VC)	17	0.085706	0.082000	0.050000	0.100000	0.011826

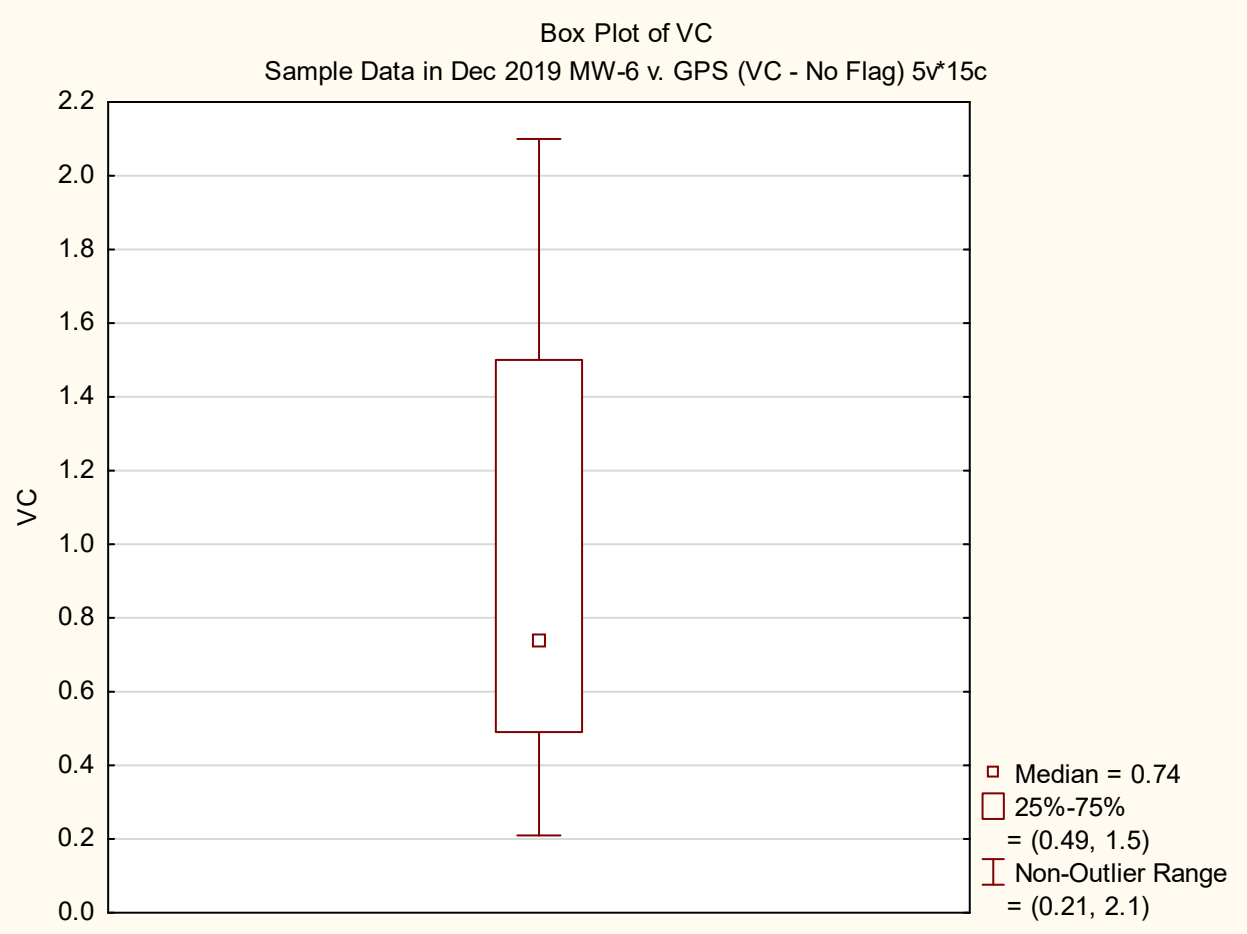
	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (VC)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-5	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-5	2*1sided exact p
VC	296.0000	299.0000	143.0000	-0.034444	0.972523	-0.034845	0.972203	17	17	0.972891

	Mann-Whitney U Test (w/ continuity correction) (Sample Data in Dec 2019 MW-8A v. Background (VC)) By variable Well Marked tests are significant at p <.01000									
variable	Rank Sum MW-8A	Rank Sum MW-15	U	Z	p-value	Z adjusted	p-value	Valid N MW-8A	Valid N MW-15	2*1sided exact p
VC	296.0000	299.0000	143.0000	-0.034444	0.972523	-0.034845	0.972203	17	17	0.972891

MW-6 v. GPS
Vinyl Chloride - No Flag



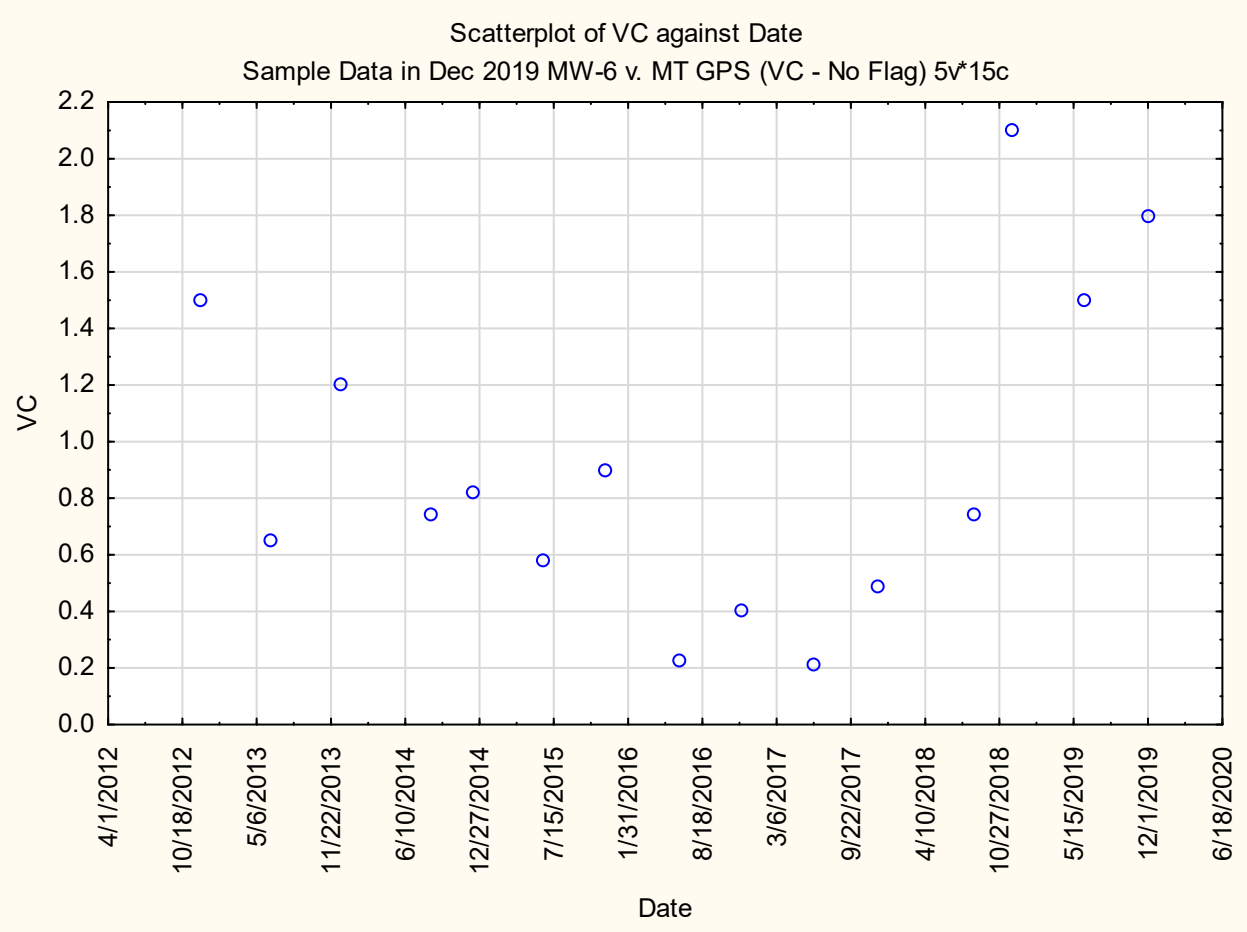
MW-6 v. GPS
Vinyl Chloride - No Flag



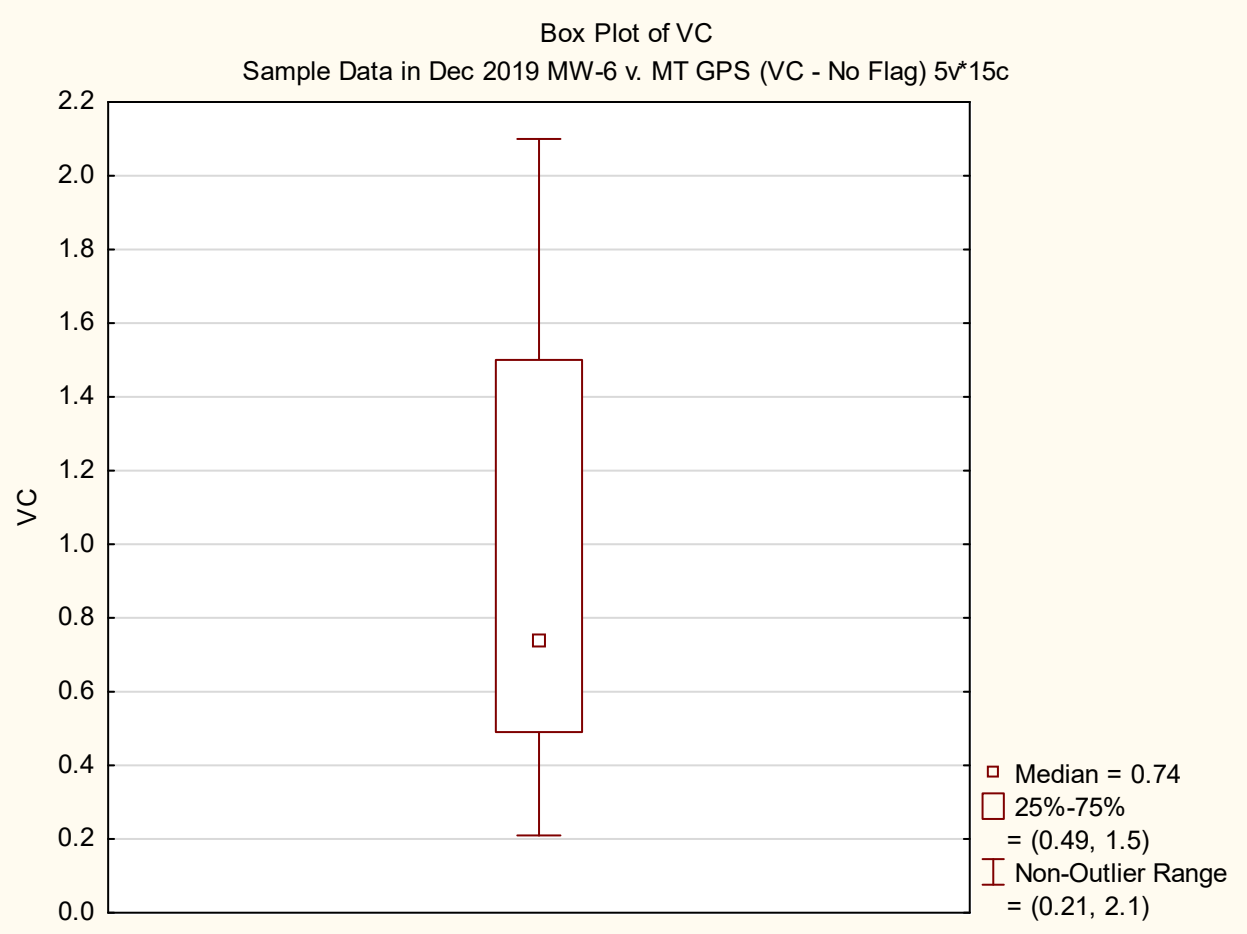
Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. GPS (VC - No Flag))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	15	0.924000	0.740000	0.210000	2.100000	0.574267

Pair of Variables	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-6 v. GPS (VC - No Flag)) Marked tests are significant at p <.01000			
	Valid N	T	Z	p-value
VC & GPS	15	1.000000	3.350975	0.000805

MW-6 v. MT GPS (0.2)
Vinyl Chloride - No Flag



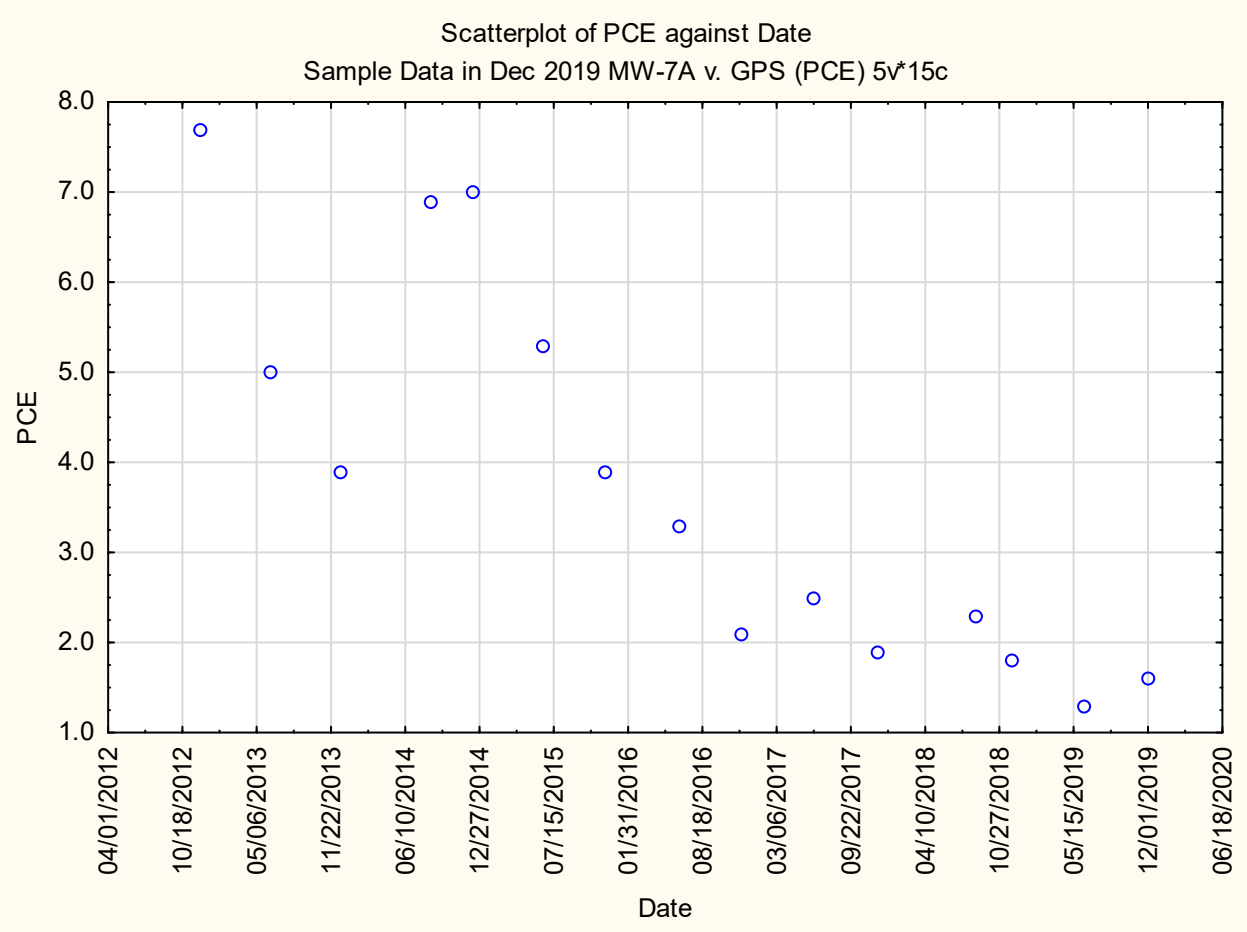
MW-6 v. MT GPS (0.2)
Vinyl Chloride - No Flag



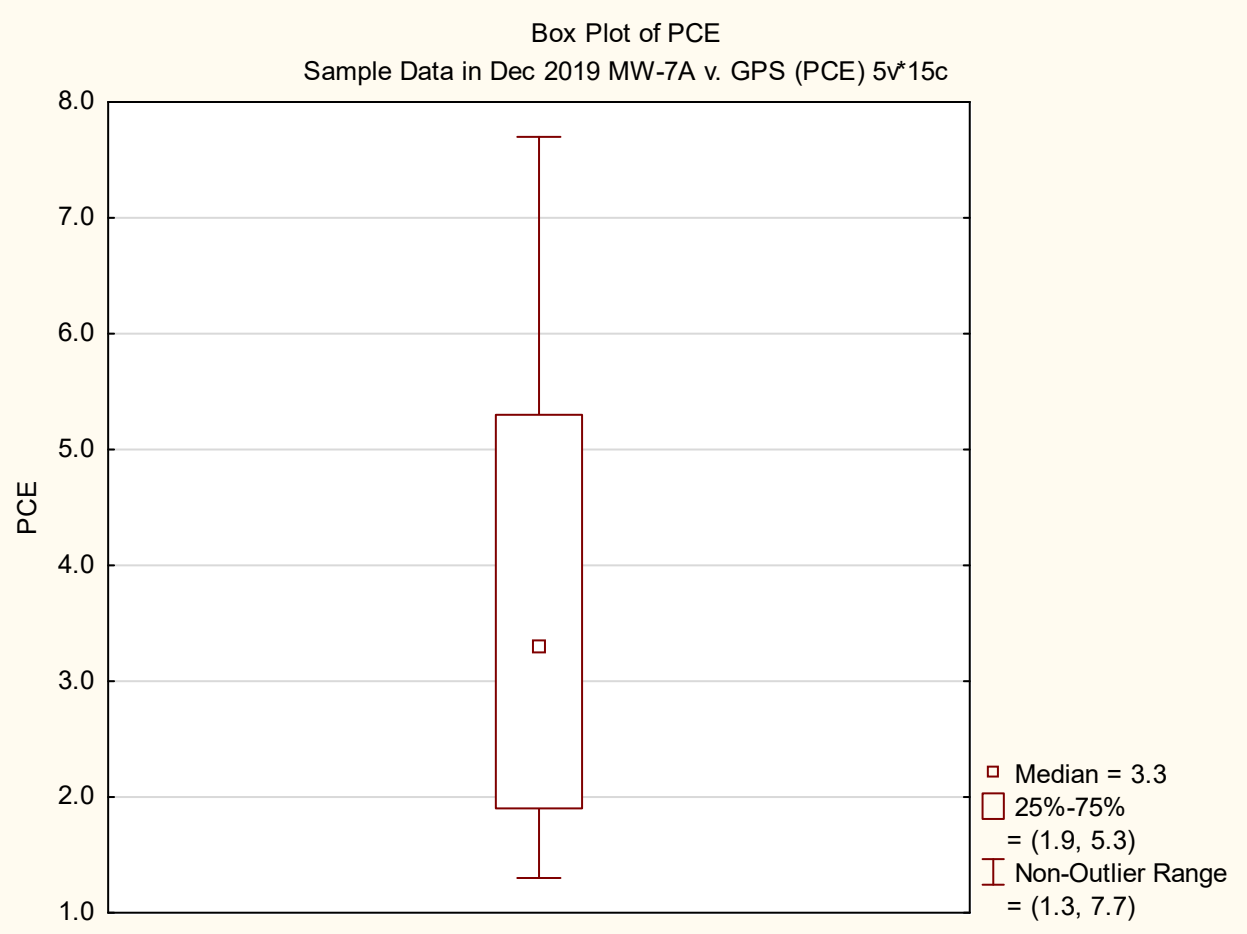
Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-6 v. MT GPS (VC - No Flag))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	15	0.924000	0.740000	0.210000	2.100000	0.574267

Pair of Variables	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-6 v. MT GPS (VC - No Flag)) Marked tests are significant at p <.01000			
	Valid N	T	Z	p-value
VC & GPS	15	0.00	3.407771	0.000655

MW-7A v. GPS
Tetrachloroethene (PCE)



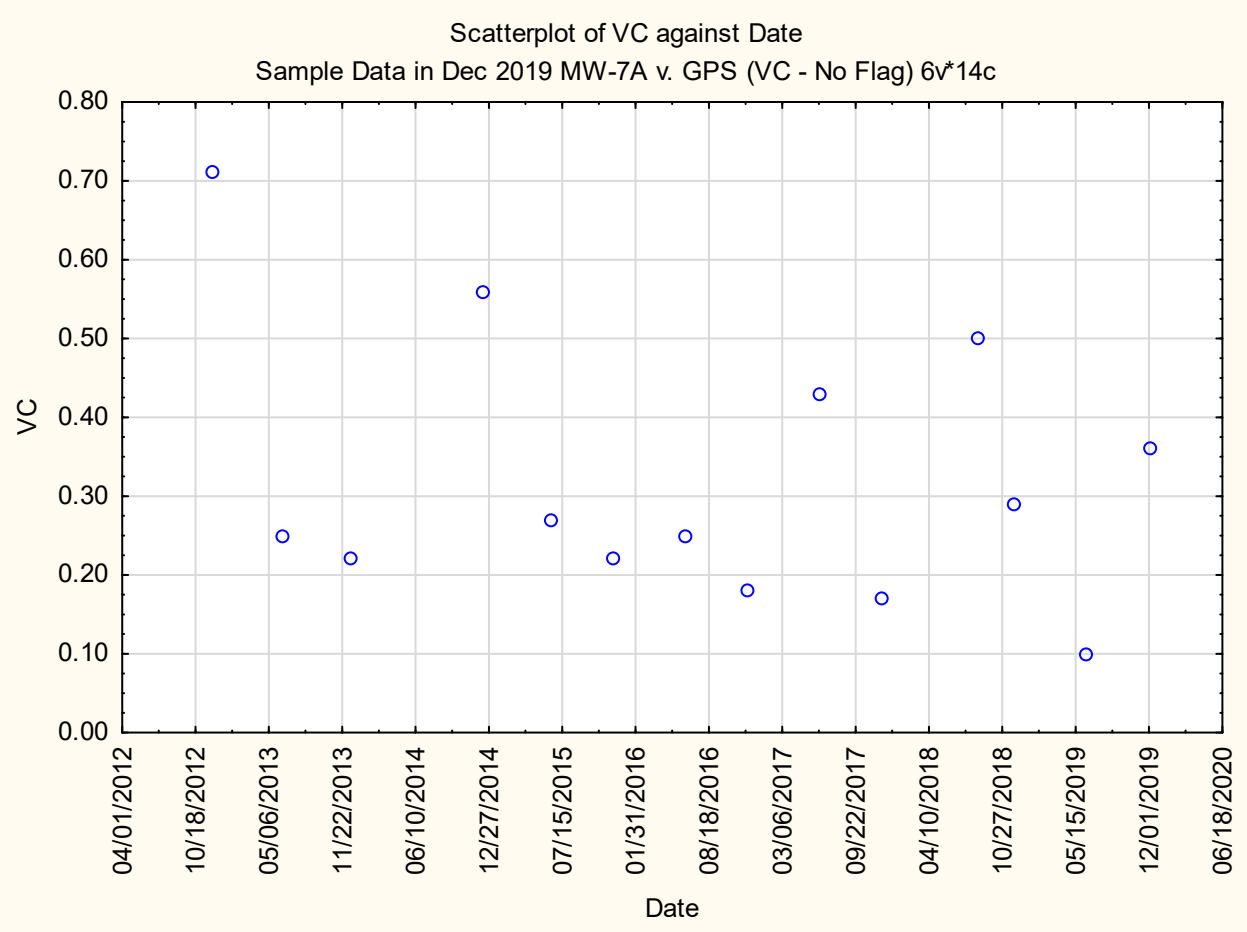
MW-7A v. GPS
Tetrachloroethene (PCE)



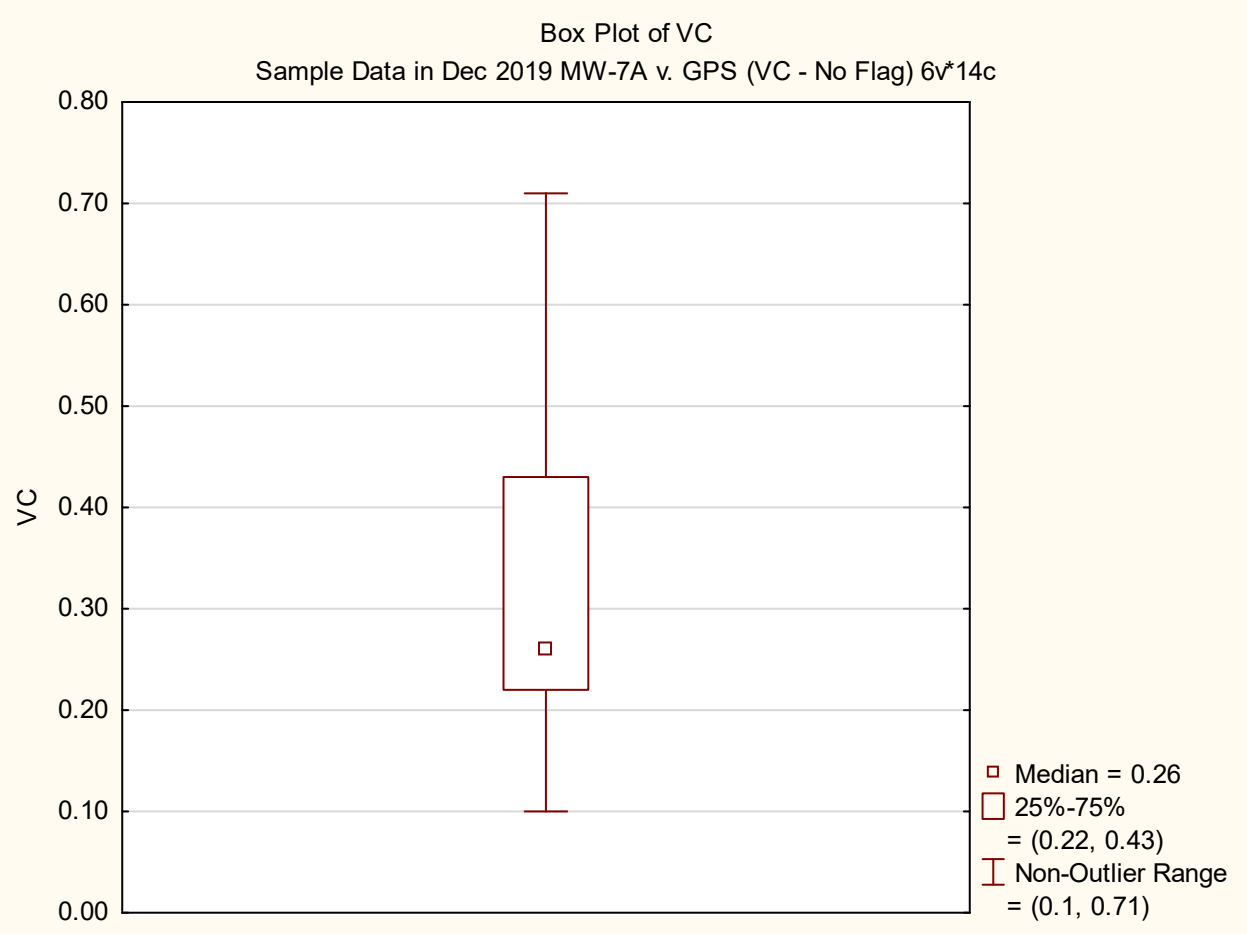
	Descriptive Statistics (Sample Data in Dec 2019 MW-7A v. GPS (PCE))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
PCE	15	3.766667	3.300000	1.300000	7.700000	2.146980

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-7A v. GPS (PCE)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
PCE & GPS	14	20.50000	2.008847	0.044554

MW-7A v. GPS
Vinyl Chloride - No Flag



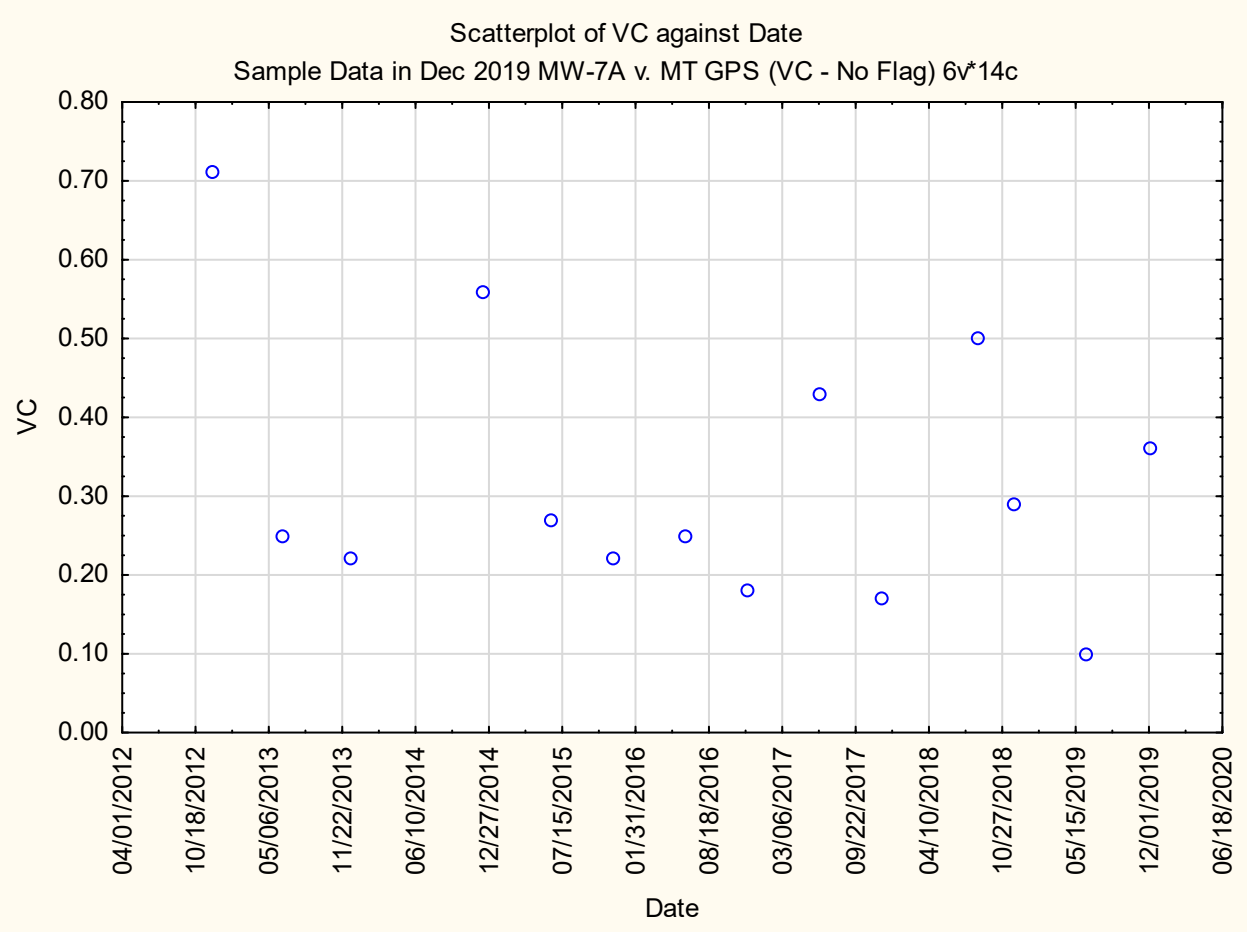
MW-7A v. GPS
Vinyl Chloride - No Flag



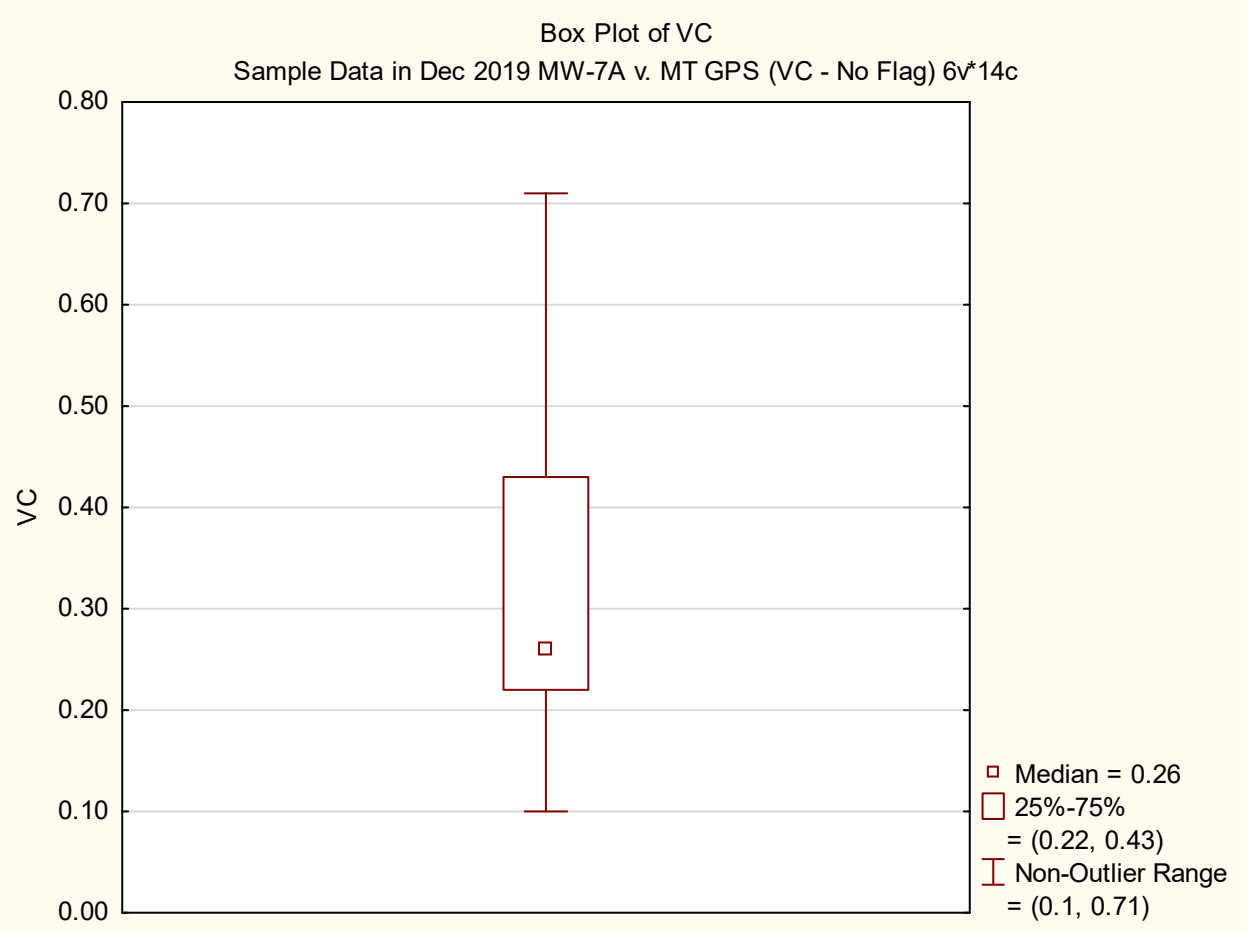
	Descriptive Statistics (Sample Data in Dec 2019 MW-7A v. GPS (VC - No Flag))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	14	0.322143	0.260000	0.100000	0.710000	0.170843

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-7A v. GPS (VC - No Flag)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
VC & GPS	14	0.00	3.295765	0.000982

MW-7A v. MT GPS (0.2)
Vinyl Chloride - No Flag



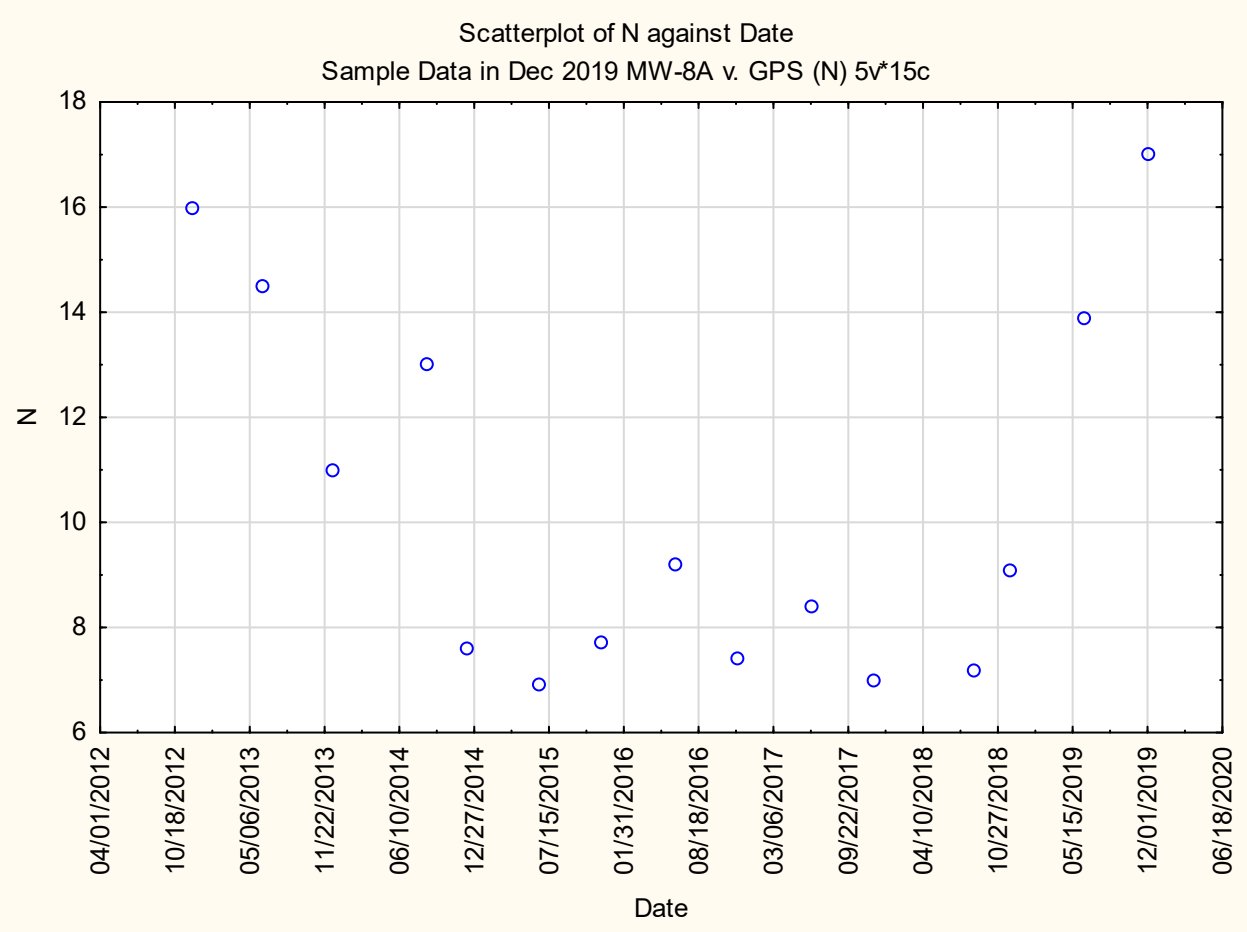
MW-7A v. MT GPS (0.2)
Vinyl Chloride - No Flag



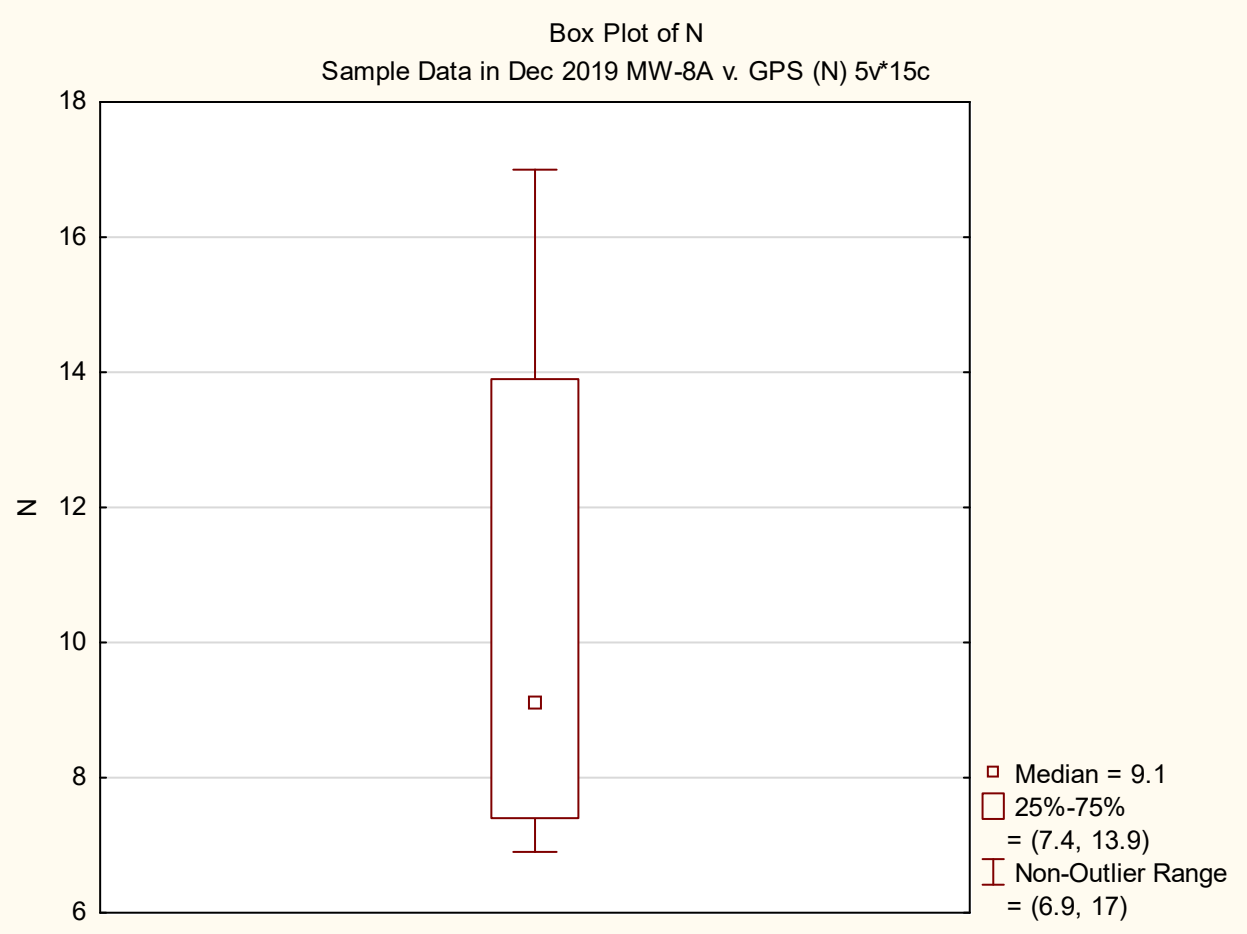
Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-7A v. MT GPS (VC - No Flag))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	14	0.322143	0.260000	0.100000	0.710000	0.170843

Pair of Variables	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-7A v. MT GPS (VC - No Flag)) Marked tests are significant at p <.01000			
	Valid N	T	Z	p-value
VC & GPS	14	16.00000	2.291342	0.021944

MW-8A v. GPS
Nitrogen, NO2 + NO3



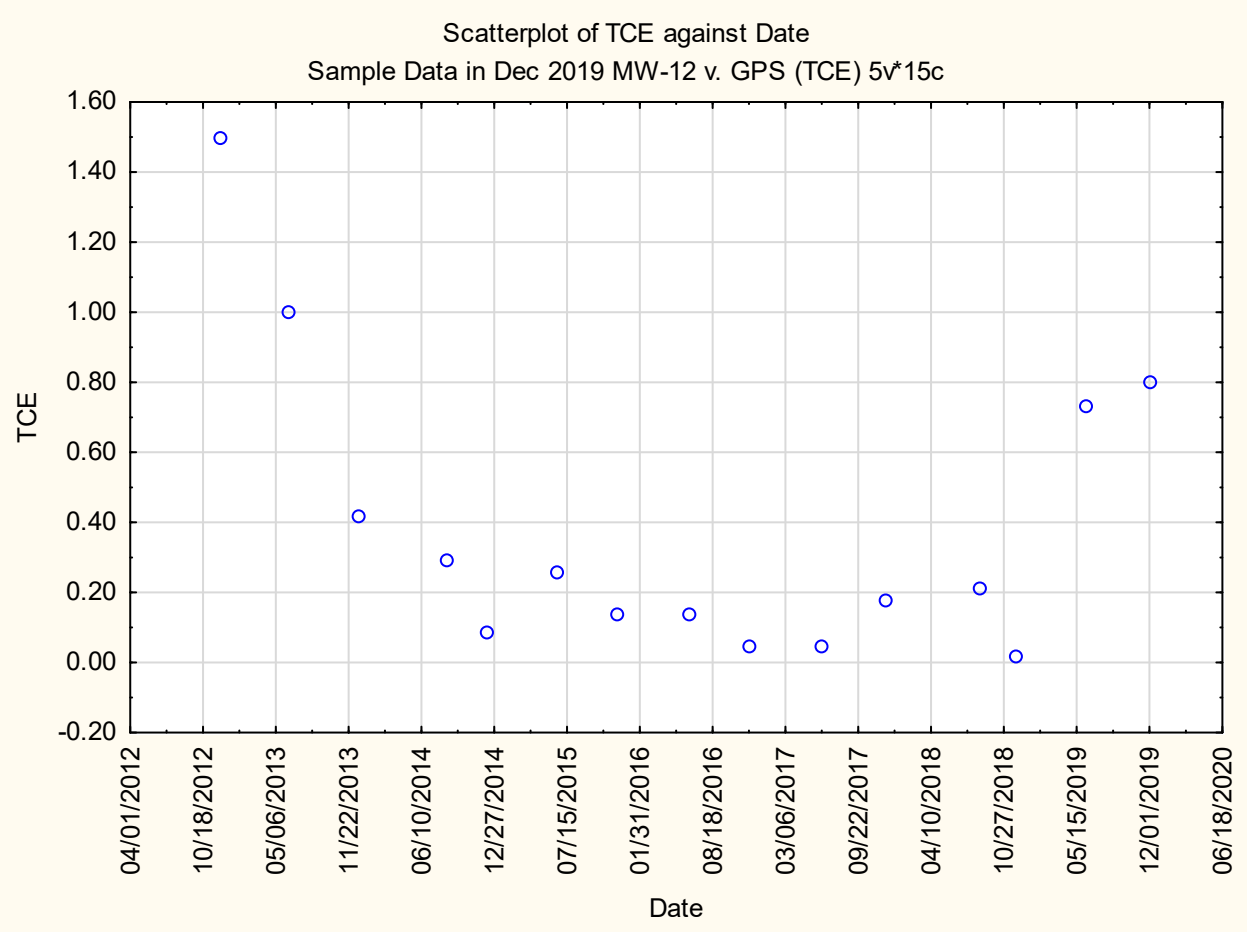
MW-8A v. GPS
Nitrogen, NO2 + NO3



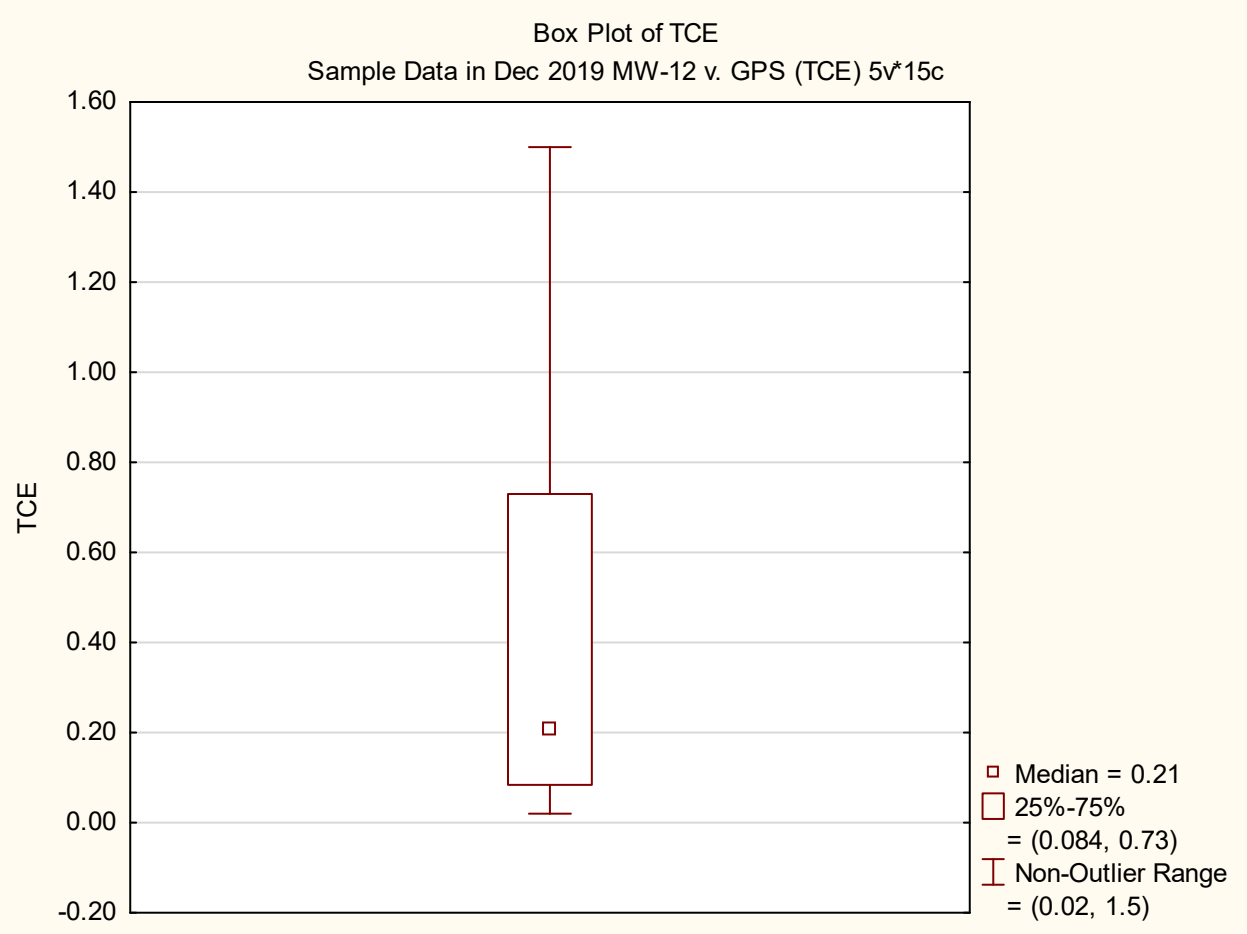
Variable	Descriptive Statistics (Sample Data in Dec 2019 MW-8A v. GPS (N))					
	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
N	15	10.39333	9.100000	6.900000	17.00000	3.549742

Pair of Variables	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-8A v. GPS (N)) Marked tests are significant at p <.01000			
	Valid N	T	Z	p-value
N & GPS	15	53.50000	0.369175	0.711997

MW-12 v. GPS
Trichloroethene (TCE)



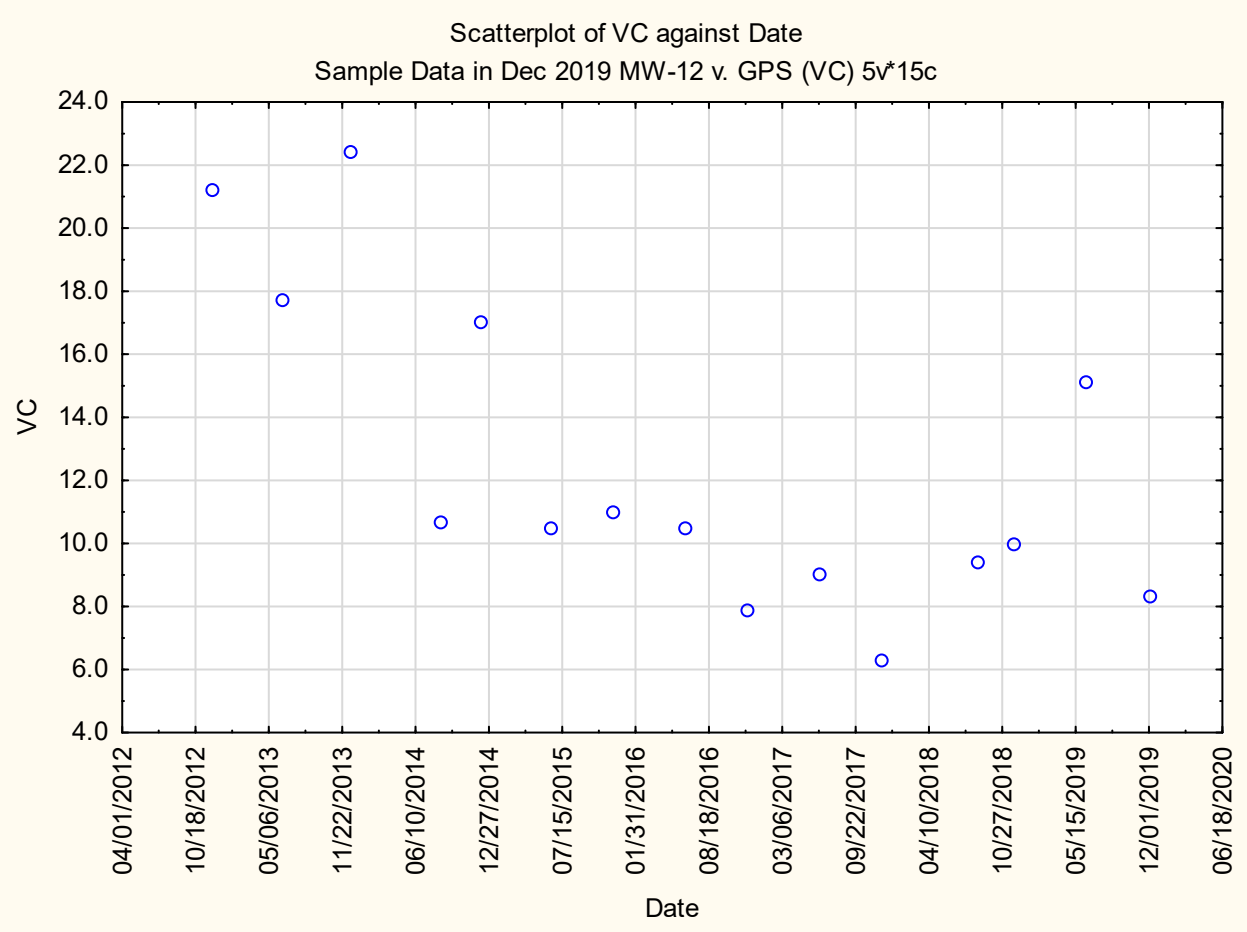
MW-12 v. GPS
Trichloroethene (TCE)



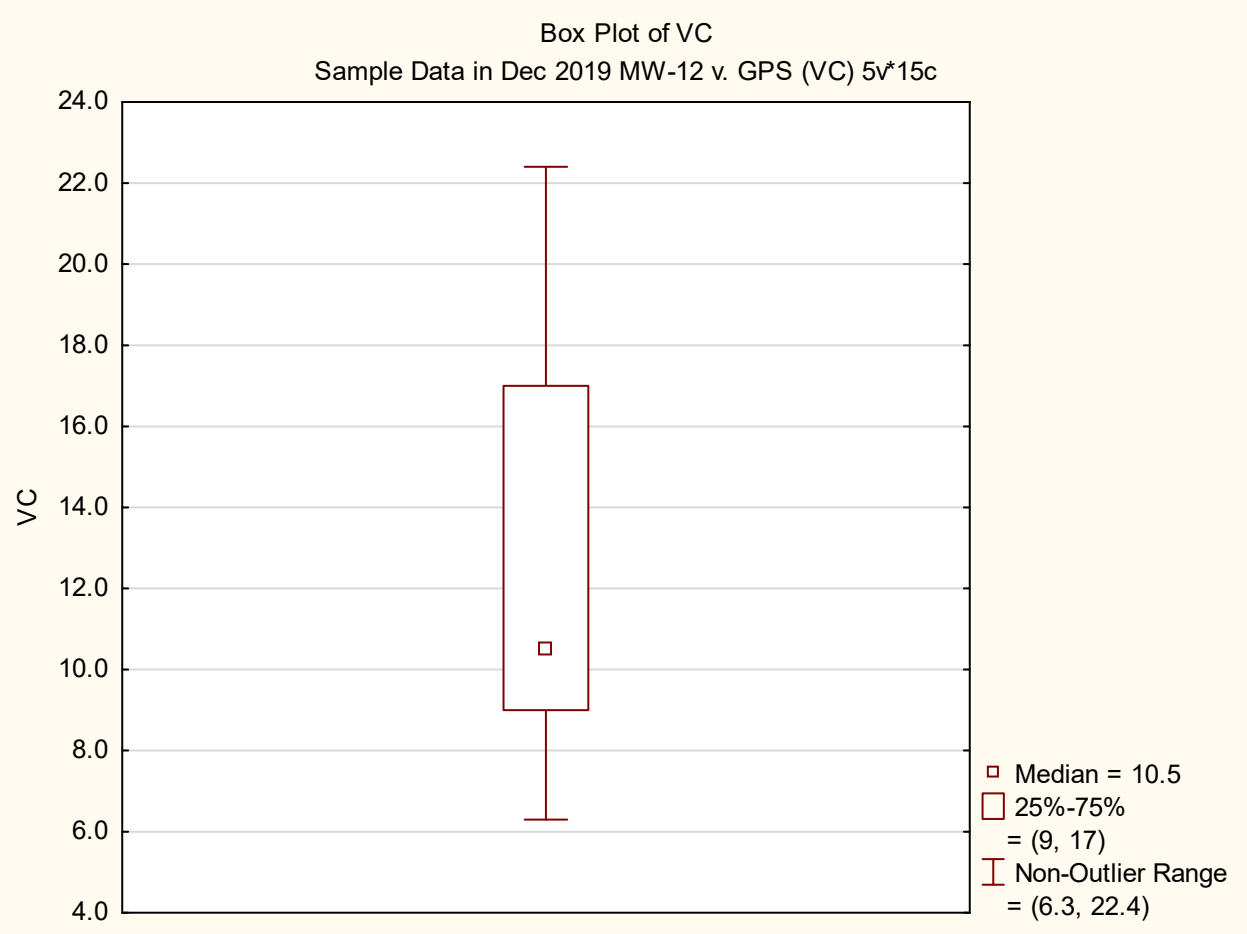
	Descriptive Statistics (Sample Data in Dec 2019 MW-12 v. GPS (TCE))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
TCE	15	0.390800	0.210000	0.020000	1.500000	0.429880

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-12 v. GPS (TCE)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
TCE & GPS	15	0.00	3.407771	0.000655

MW-12 v. GPS
Vinyl Chloride



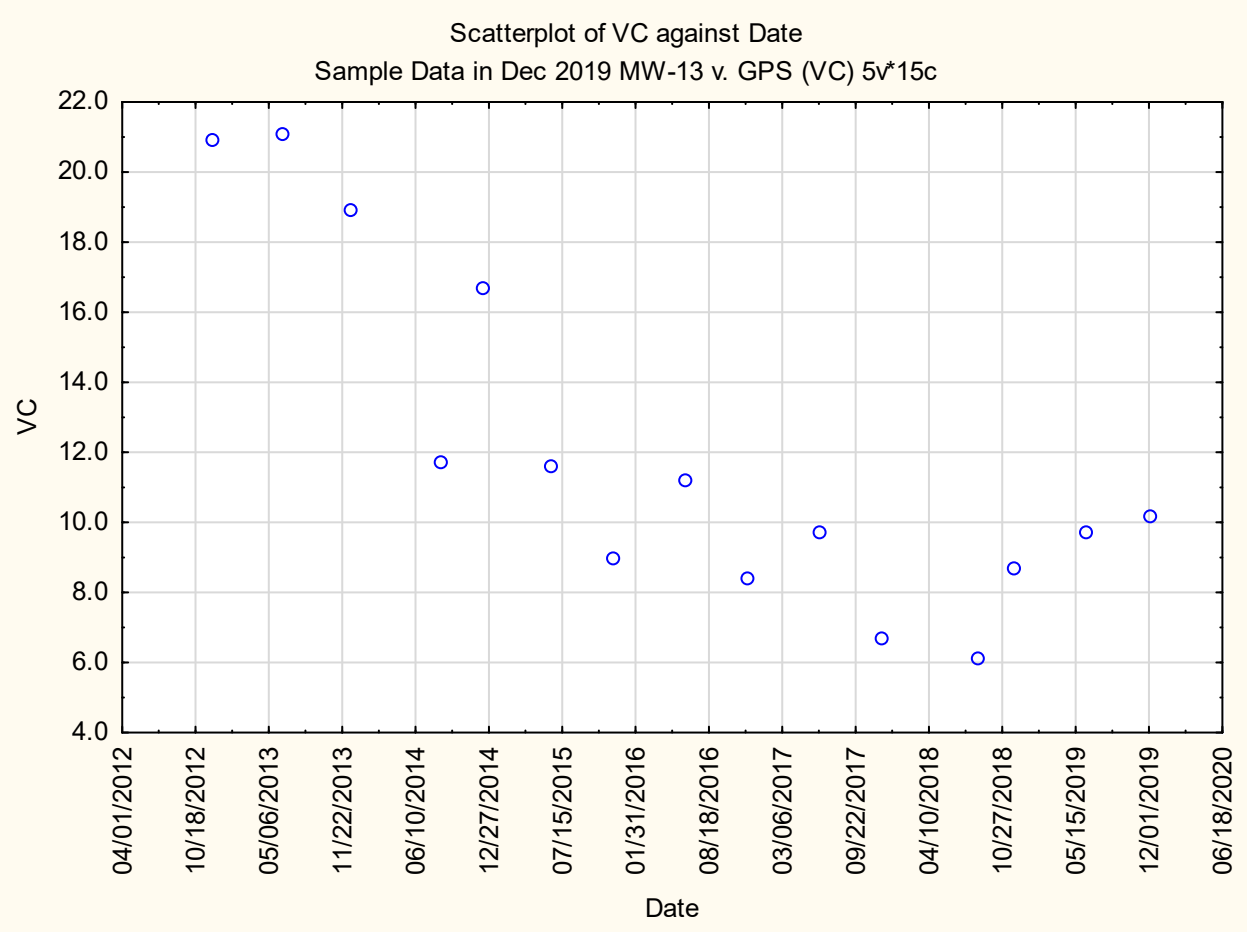
MW-12 v. GPS
Vinyl Chloride



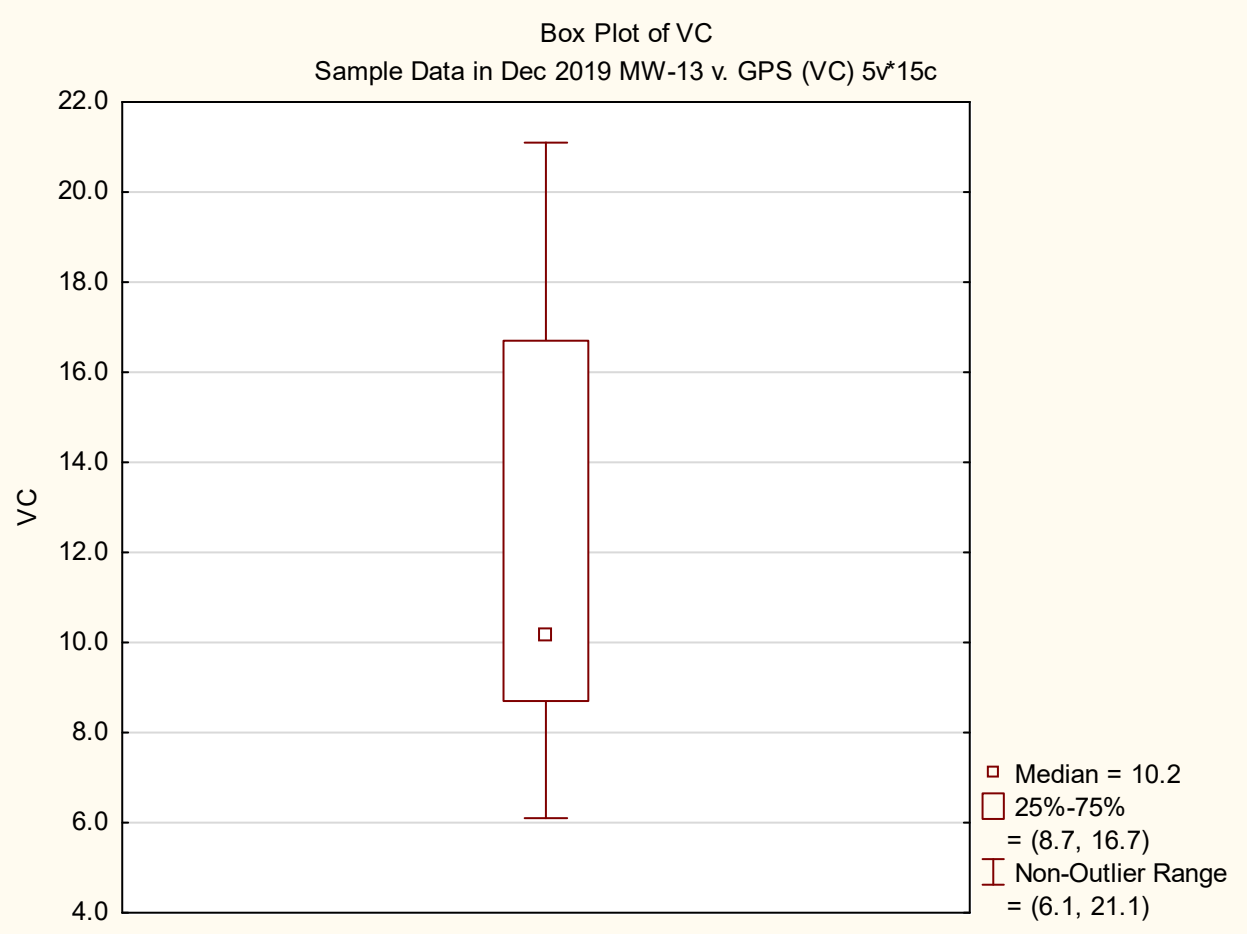
	Descriptive Statistics (Sample Data in Dec 2019 MW-12 v. GPS (VC))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	15	12.46667	10.50000	6.300000	22.40000	4.975464

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-12 v. GPS (VC)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
VC & GPS	15	0.00	3.407771	0.000655

MW-13 v. GPS
Vinyl Chloride



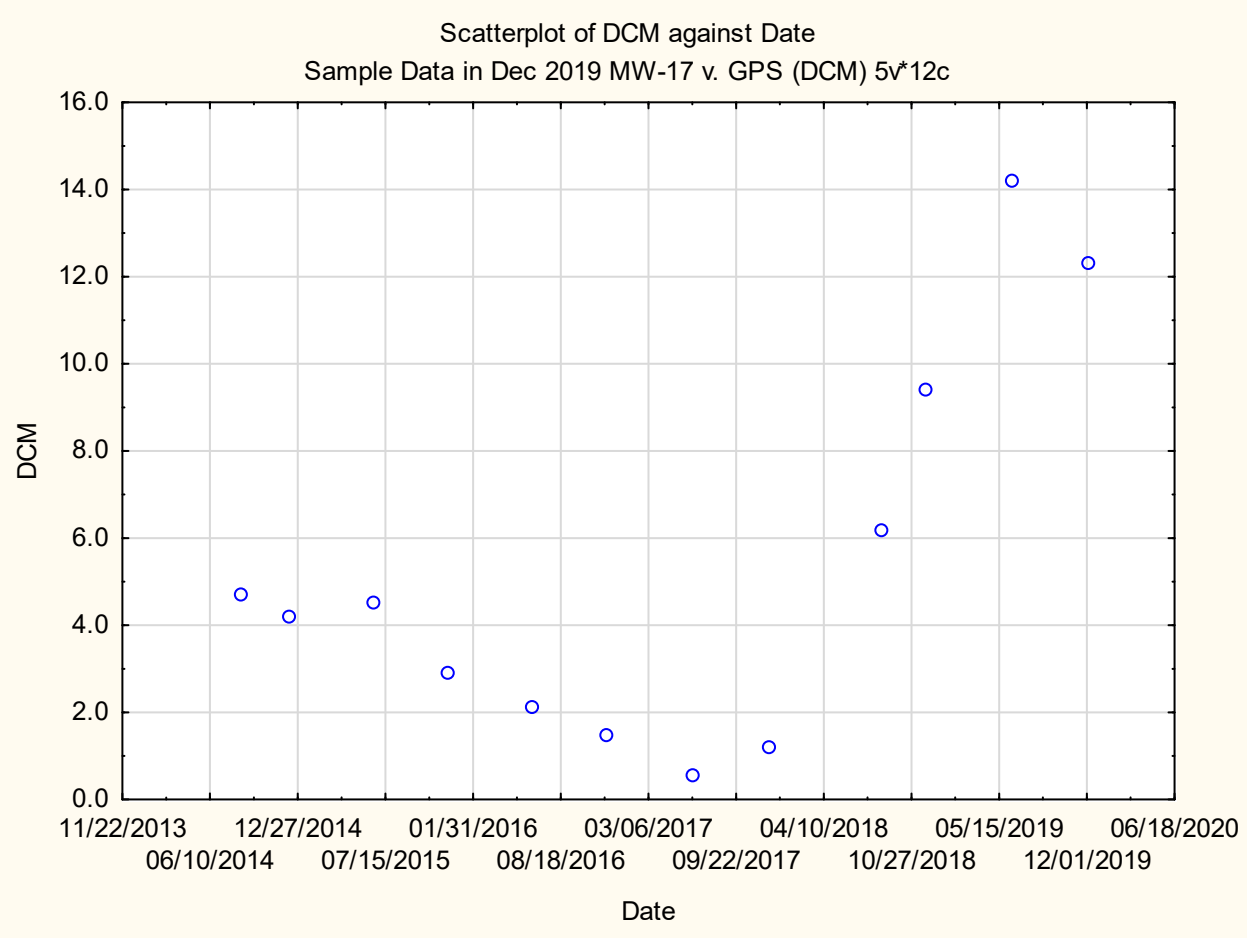
MW-13 v. GPS
Vinyl Chloride



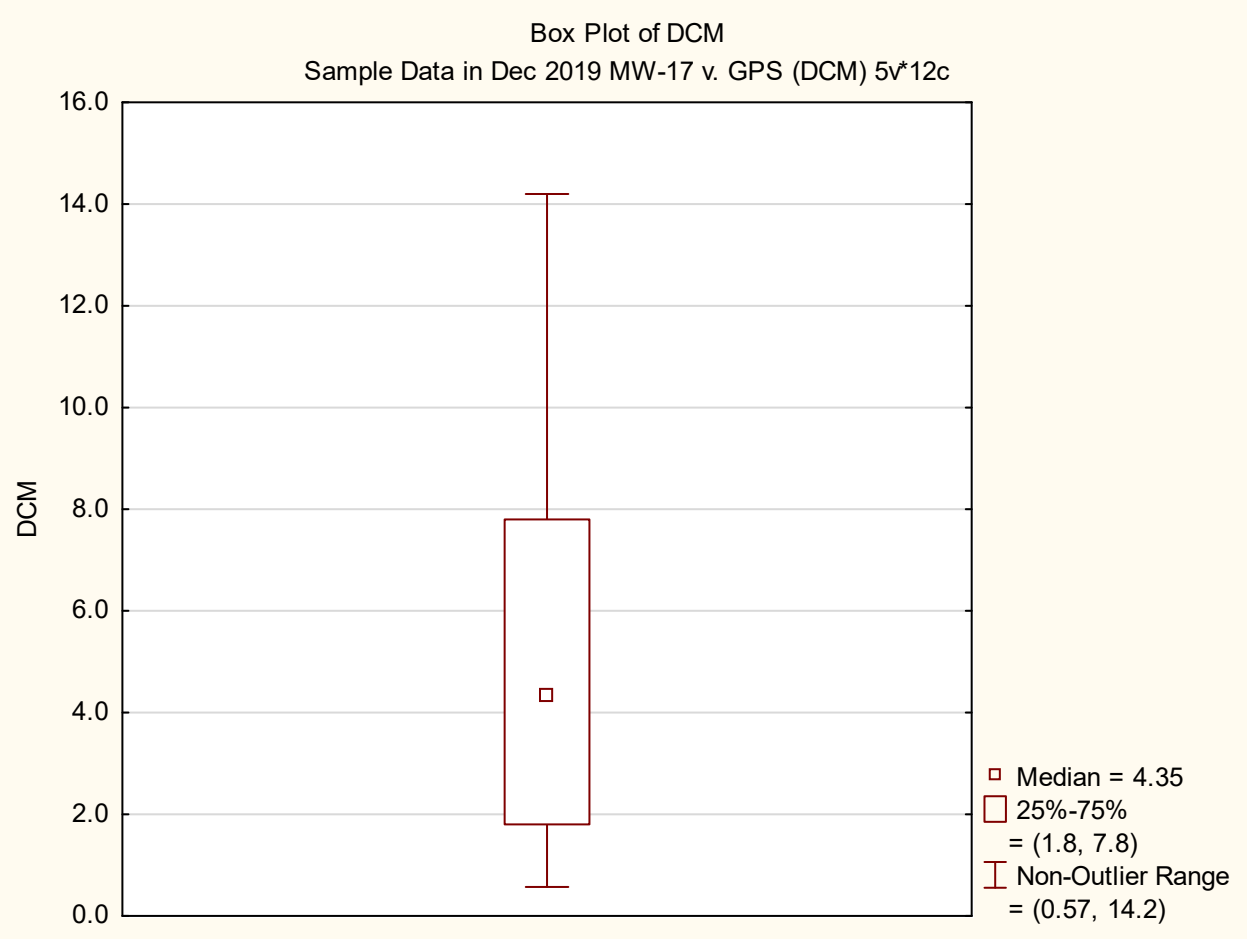
	Descriptive Statistics (Sample Data in Dec 2019 MW-13 v. GPS (VC))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
VC	15	12.04000	10.20000	6.100000	21.10000	4.943654

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-13 v. GPS (VC)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
VC & GPS	15	0.00	3.407771	0.000655

MW-17 v. GPS
Methylene Chloride(DCM)



MW-17 v. GPS
Methylene Chloride(DCM)



	Descriptive Statistics (Sample Data in Dec 2019 MW-17 v. GPS (DCM))					
Variable	Valid N	Mean	Median	Minimum	Maximum	Std.Dev.
DCM	12	5.314167	4.350000	0.570000	14.20000	4.448294

	Wilcoxon Matched Pairs Test (Sample Data in Dec 2019 MW-17 v. GPS (DCM)) Marked tests are significant at p <.01000			
Pair of Variables	Valid N	T	Z	p-value
DCM & GPS	12	36.00000	0.235339	0.813945