WCI Austin Landfill, LLC.

2022 Coal Combustion Residuals Annual Monitoring Report

SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota 55912
Permit SW-514-001

January 30, 2023

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Austin, Minnesota 55912
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Prepared for:
WCI Austin Landfill, LLC.
251 Starkey Street
St. Paul, MN 55107

Prepared by:
Groundwater & Environmental Services, Inc.
1301 Corporate Center Drive, Suite 190
Eagan, MN 55121
TEL: 800-735-1077
www.gesonline.com

GES Project:
3502297

Date:
January 30, 2023

James F. Simonet, P.G.
Senior Project Hydrogeologist

Bonnie Janowiak, Ph. D.
Principle Chemist

Kevin Michael Lienau, P.E.
Corporate Engineering Manager
Professional Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature:
Typed or Printed Name: Kevin Michael Lienau
Date: 01/30/2023 License Number: 25086

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Acronyms

BTV	Background Threshold Value
CCR	Coal Combustion Residuals (CCR)
CFR	Code of Federal Regulations
COC	Chemicals of Concern
Eurofins TA	Eurofins TestAmerica, Inc.
GES	Groundwater & Environmental Services, Inc.
GPS	Groundwater Protection Standards
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MPCA	Minnesota Pollution Control Agency
NGVD	National Geodetic Vertical Datum
pci/L	picoCuries per liter
QA/QC	Quality Assurance/Quality Control
Report	2022 Coal Combustion Residuals Annual Monitoring Report
SSI	statistically significant increase
US EPA	United States Environmental Protection Agency
USL	Upper Simultaneous Limit

1 Introduction

The *2022 Combustion Coal Residuals Annual Monitoring Report* (Report) was prepared to summarize the results of the 2022 groundwater monitoring events and associated analysis for Appendix III (detection monitoring) and Appendix IV (assessment monitoring), per 40 Code of Federal Regulations (CFR) §§ 257.90 – 257.98, at the SKB Lansing Landfill. The SKB Lansing Landfill operates under Minnesota Pollution Control Agency (MPCA) Site Permit Number SW-514-001. The SKB Lansing Landfill is located at 52563 243rd Street in Austin, Mower County, Minnesota (**Figure 1**).

Two groundwater sampling events were conducted at the SKB Lansing Landfill in the spring and summer of 2022. Groundwater samples were analyzed for parameters included in Appendix III (detection monitoring) and Appendix IV (assessment monitoring). Analytical results from the groundwater monitoring events were compared and evaluated to Background Threshold Values (BTVs) and Groundwater Protection Standards (GPS) established for the SKB Lansing Landfill.

1.1 Scope of Work

The following scope of work was conducted for the 2022 CCR groundwater monitoring events:

- Conduct 2 gauging and sampling events of the site's monitoring wells and piezometers.
- Measure static water elevations for each monitoring well to the nearest 0.01 feet from surveyed reference point.
- Record the volume of water removed from each monitoring well (in gallons) and total well volumes removed before sampling.
- Record field parameter stabilization results from each monitoring well.
- Conduct a statistical evaluation of groundwater sampling analytical data using ProUCL 5.0.00 (Singh, 2013) to determine BTVs for each analyte.
- Select tolerance or prediction interval procedure for future statistical analysis of groundwater monitoring data.
- Prepare a Coal Combustion Residuals (CCR) Annual Monitoring Report summarizing the groundwater sampling and statistical evaluation.

2 Site Background

2.1 Site Location and Description

The WCI Austin Landfill permit (Permit SW-542), was combined with the SKB Lansing Landfill permit (Permit SW-514). The combined permit is identified as SW-514-001. The site is located within a 115-acre parcel of land in Section 21, Township 103 North, Range 18 West, Lansing Township, Mower County, Minnesota. With reference to roadways, the facility is located west of State Highway 218 along Lansing Township Road T-378 (243rd Street). The facility entrance is

off Lansing Township Road T-378 (243rd Street). The facility location is depicted in **Figure 1** and the existing site conditions are presented in **Figure 2**.

Located in the Cedar River watershed, the site has rolling topography ranging in elevation from 1,218 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) in the southwest corner to 1,314 feet above NGVD 29 in the central portion of the site. Storm water flows either to natural depressions scattered about the site or to storm water retention areas in the south and southwest parts of the property. Storm water ultimately goes to a judicial ditch. The nearest open water body is the Cedar River, located approximately 3 miles east of the site.

3 Monitoring Network Systems and Sampling Schedule

The CCR sampling groundwater monitoring network at the SKB Lansing Landfill was designed based on the analysis of local and regional hydrologic conditions. Currently, the groundwater monitoring network system consists of 8 monitoring wells (one well set to monitor the shallow till layer and one well set to monitor the deeper sand layer) (**Figure 2**). Groundwater elevations are also collected from an additional 19 monitoring wells and 7 piezometers. The monitoring wells and piezometers used as data collection points have been divided into 2 groups for the purpose of this report:

Gauging and Sampling (8 Monitoring Wells)

- Upgradient Monitoring Points. The upgradient monitoring points consist of monitoring wells located upgradient of the compliance boundary and include MW-1 and MW-1RD.
- Downgradient Monitoring Points. The downgradient monitoring points consist of monitoring wells located downgradient of the compliance boundary and include MW-2R, MW-2RD, MW-3, MW-3R, MW-3RD, and MW-4.

Gauging Only (19 Monitoring Wells and 7 Piezometers)

- Downgradient Monitoring Points. The downgradient monitoring points consist of monitoring wells located downgradient of the compliance boundary and include MW-5S, MW-5D, MW-6S, MW-7S, MW-7D, MW-8S and MW-8D.
- Piezometer Monitoring Points. The piezometer monitoring points consist of shallow monitoring points used exclusively for the collection of groundwater elevations across the site. These locations include PIEZ-1, PIEZ-2, PIEZ-3, PIEZ-4, PIEZ-5, P-10 and P-11.
- Upgradient/Sidegradient Monitoring Points. Upgradient/sidegradient monitoring points consist of monitoring wells east of the compliance boundary and include wells located at the former Austin or Vonco IV Landfill (MW-1A, MW-2A, MW-3A, MW-4A, MW-101A, MW-102A, MW-103A, MW-104A, MW-105A, MW-106A, MW-107A, and MW-108A).

For the CCR evaluation, a total of 2 groundwater monitoring events were conducted in 2022 on the following dates:

- March 21, 2022
- July 18-19, 2022

4 Groundwater Sampling Methodology

During the SKB Lansing Landfill CCR sampling events, static groundwater elevations were measured to the nearest 0.01 feet in each monitoring well with a water interface probe prior to groundwater sample collection. Using a location-dedicated, pneumatic low-flow bladder pump, each well was purged and field stabilization parameters including Temperature, pH, Specific Conductance, Turbidity, Dissolved Oxygen, and Oxidation-Reduction Potential (ORP) were recorded.

Groundwater samples were placed in laboratory-prepared containers and labeled with the following information:

- Unique sample number
- Site name
- Name of sampler
- Time and date

Immediately following collection, samples were placed on ice in a field cooler and shipped with a chain of custody form to a Eurofins Test America, Inc. (Eurofins TA) of Amherst, New York.

Groundwater samples obtained during the 2022 sampling events were analyzed for parameters specified in Appendix III (spring and summer) and Appendix IV (spring (full analyte list) and summer (analytes detected in spring event)) per §§ 257.93 – 257.95 and are noted below:

Appendix III

General Chemistry

- Chloride (Method 9056A)
- Fluoride (Method 9056A)
- Sulfate as SO4 (Method 9056A)
- pH (Method 4500 H+ B)
- Total Dissolved Solids (Method 2540C)

Metals

- Boron
- Calcium

Appendix IV

Metals

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium

- Chromium
- Cobalt
- Lead
- Lithium
- Mercury
- Molybdenum
- Radium 226
- Radium 228
- Selenium
- Thallium

General Chemistry

- Fluoride (Method 300.0)

The above metals were analyzed by Methods 6020B, and 7470A. Radium was analyzed by Methods 9315 and 9320.

Quality assurance/quality control (QA/QC) samples including duplicate, field, and equipment samples were collected during each sampling event.

5 Groundwater Monitoring Results

5.1 Groundwater Elevation Data

Groundwater elevations recorded during the monitoring events are presented in **Table 1**. Groundwater contours maps were generated for the March 21 and July 18, 2022 gauging events. Based on the shallow well groundwater elevation data, water table contours indicate that the shallow groundwater flows to the southwest (**Figures 3** and **5**). Six monitoring well locations are used to monitor a deeper water-bearing unit beneath the site. Based on the deeper well groundwater elevation data, potentiometric surface contours indicate a southwest flow direction in the lower aquifer (**Figures 4** and **6**). The groundwater flow directions are consistent with historically recorded flow directions.

5.2 Groundwater Analytical Data

Groundwater analytical results for the CCR monitoring events are presented in **Tables 2** and **3**. QA/QC duplicate samples were collected for precision evaluation, but were not included in the tables. A summary of the stabilization parameter tests performed for each well prior to sampling are provided in **Table 4** and copies of field sampling data sheets are in **Appendix A**. Laboratory analytical reports are included in **Appendix B**.

The calculated BTVs for the SKB Lansing Landfill are provided in **Table 5**. Comparing the 2022 sampling results to the BTVs are summarized below.

<u>Appendix III Analytes - Result Summary of BTV Exceedances</u>

Boron (BTV = 3.4 milligrams per liter (mg/L))

- Downgradient monitoring well
  - MW-2R (3.9 mg/L) (3/21/2022) – BTV exceedance confirmed. Statistically significant.
  - MW-2R (3.8 mg/L) (7/18/2022) – BTV exceedance confirmed. Statistically significant.

Chloride (BTV = 111.1 mg/L)

- Upgradient monitoring well
  - MW-1 (260 mg/L) (3/21/2022) – BTV Exceedance.
  - MW-1 (160 mg/L) (7/18/2022) – BTV exceedance confirmed. Statistically significant.

Appendix IV Analytes - Result Summary of BTV Exceedances

Antimony (BTV = 0.0020 mg/L)

- Upgradient monitoring well
  - MW-1 (0.0022 mg/L) (3/21/2022) – Exceeded BTV in spring 2022. Below BTV results in summer 2022 (<0.0020 mg/l) indicate spring exceedance is not statistically significant.

- Downgradient monitoring wells
  - MW-2R (0.20 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.21 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3R (0.018 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-4 (0.0032 mg/L) (3/21/2022) – Exceeded BTV in spring 2022. Below BTV results in summer 2022 (<0.0020 mg/l) indicate spring exceedance is not statistically significant.

Arsenic (BTV = 0.0259 mg/L)

- Downgradient monitoring well
  - MW-2R (0.19 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.20 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

Barium (BTV = 0.6 mg/L)

- Downgradient monitoring well
  - MW-3R (0.63 mg/L) (3/21/2022) – Exceeded BTV in spring 2022. Below BTV results in summer 2022 (0.57 mg/l) indicate spring exceedance is not statistically significant.

Cadmium (BTV = 0.0502 mg/L)

- Downgradient monitoring well
  - MW-2R (0.093 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.099 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

Cobalt (BTV = 0.0081 mg/L)

- Downgradient monitoring well
  - MW-2R (0.087 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.0087 mg/L) (3/21/2022) – BTV exceedance.
  - MW-3 (0.093 mg/L) (7/19/2022) – BTV exceedance confirmed. Statistically significant.

Lead (BTV = 0.0179 mg/L)

- Downgradient monitoring well
  - MW-2R (0.19 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.20 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

Lithium (BTV = 0.0455 mg/L)

- Upgradient monitoring well
  - MW-1 (0.087 mg/L) (3/21/2022) – BTV exceedance.
  - MW-1 (0.046 mg/L) (7/18/2022) – BTV exceedance confirmed. Statistically significant.

- Downgradient monitoring well
  - MW-2R (0.19 mg/L) (7/18/2022) – BTV exceedance. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.20 mg/L) (7/19/2022) – BTV exceedance. Confirmation sampling scheduled for spring of 2023.

Molybdenum (BTV = 0.0222 mg/L)

- Downgradient monitoring well
  - MW-2R (0.19 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.21 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

Selenium (BTV = 0.034 mg/L)

- Downgradient monitoring well
  - MW-2R (0.36 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.39 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

Thallium (BTV = 0.0102 mg/L)

- Downgradient monitoring well
  - MW-2R (0.18 mg/L) (7/18/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3 (0.20 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.
  - MW-3R (0.023 mg/L) (7/19/2022) – BTV exceedance not confirmed. Confirmation sampling scheduled for spring of 2023.

6 Statistical Evaluation Data

This groundwater statistical evaluation for landfill monitoring is conducted in accordance with § 257.93(f)(3). Specifically, current concentrations were compared to the interwell upper simultaneous limits (USLs) in order to determine if a potential statistically significant increase (SSI) exists at downgradient wells.

The background dataset was determined for each well using analytical results ranging from spring 2017 to the most recent sampling event in July 2022.

Statistical evaluation of the 2017 - 2022 CCR groundwater monitoring data determined background concentrations and included:

1) Establishing final background datasets for each chemical of concern (COC) including outlier testing.
2) Deriving statistical, upper bound estimates of the background population for each COC using the final background datasets.

To establish final background datasets for each COC, descriptive statistics, outlier analysis and comparative statistical analysis performed on the background datasets confirmed the data in the background dataset for a given COC as representative of the 'true' background population. Descriptive statistics include the number of samples, the number of detections, the detection frequency, the maximum and minimum detected concentrations, the mean, and the standard deviation of the background data, all of which provide a preliminary examination of data.

Outlier analyses identified potential outliers not representative of the true background population. Including real outliers in a dataset can potentially lead to Type I or Type II errors (USEPA, 2009). Rosner's Outlier Test was performed on background datasets containing four (4) detected values or more (USEPA, 2009). Based on an alpha of 0.05, statistically significant outliers were removed

from the background dataset in order to improve the power of the prediction limit (USEPA, 2009). The resulting background dataset for each well and COC is tabulated in **Attachment C**.

For the final background datasets after outlier analyses, summary statistics calculated the number of samples, number of detections, detection frequency, maximum and minimum detected concentrations, mean concentration, and the standard deviation. The final datasets calculations of the underlying distributions employing Shapiro-Wilks (e.g., normal, lognormal, gamma) using ProUCL 5.0.00 (Singh, 2013) before statistical limits were estimated allowed determination of the appropriate estimates that best describe the background datasets.

The following statistical limits for potential use as a background level (Background Threshold Values (BTVs)) were calculated using ProUCL 5.0.00 (Singh, 2013) for each COC when five or more detections were present:

- 95% upper simultaneous limit (USL)

The 95% USL was selected as the proposed BTVs as:

1) Many of the background datasets contain limited sample sizes and, therefore, are unlikely to represent the full range of natural ambient concentrations in the vicinity of the site.

2) This statistic should result in lower Type I error rates (i.e., false positives) and can be used to compare many observations.

If there were no detected results, the highest detection limit was proposed as the BTV. The calculated BTVs are included in **Table 5**. The statistical evaluation data is included in **Appendix C**.

6.1 Statistically Significant Increase Determination

The detected concentrations for the first and second half 2022 sampling events with the respective USL are listed below. Compliance is determined by comparing the current concentration to the calculated USL. Boron concentrations at monitoring well MW-2R were confirmed as an SSI. Chloride and Lithium concentrations at monitoring well MW-1 were confirmed as SSIs. Cobalt concentrations at monitoring well MW-3 were confirmed as an SSI.

Comparison of 2022 Confirmed COC Concentrations to USLs

Monitoring Well	Analyte	First Half 2022 Conc (mg/L unless noted)	USL Conc (mg/L unless noted)	Second Half 2022 Conc (mg/L unless noted)	USL Notes
MW-1	Chloride	**260**	111.1	**160**	Exceedance confirmed
MW-1	Antimony	**0.0022**	0.0020	ND (<0.0020)	Exceedance but not statistically significant
MW-1	Lithium	**0.087**	0.0455	**0.046**	Exceedance confirmed

MW-2R	Boron	**3.9**	3.4	**3.8**	Exceedance confirmed
MW-2R	Antimony	ND (<0.0020)	0.0020	**0.20**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Arsenic	ND (<0.0020)	0.0259	**0.19**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Cadmium	0.00013	0.0502	**0.093**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Cobalt	0.0020	0.0081	**0.087**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Lead	ND (<0.00050)	0.0179	**0.19**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Lithium	ND (<0.010)	0.0455	**0.19**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Molybdenum	0.0022	0.0222	**0.19**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Selenium	ND (<0.0050)	0.034	**0.36**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-2R	Thallium	ND (<0.0010)	0.0102	**0.18**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Antimony	ND (<0.0020)	0.0020	**0.21**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Arsenic	0.0063	0.0259	**0.20**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Cadmium	ND (<0.00010)	0.0502	**0.099**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Cobalt	**0.0087**	0.0081	**0.093**	Exceedance confirmed
MW-3	Lead	ND (<0.00050)	0.0179	**0.20**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Lithium	ND (<0.010)	0.0455	**0.20**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Molybdenum	0.0058	0.0222	**0.21**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023

MW-3	Selenium	ND (<0.0050)	0.034	**0.39**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3	Thallium	ND (<0.0010)	0.0102	**0.20**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3R	Antimony	ND (<0.0020)	0.0020	**0.018**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-3R	Barium	**0.63**	0.6	0.57	Exceedance but not statistically significant
MW-3R	Thallium	ND (<0.0010)	0.0102	**0.023**	Exceedance not confirmed. Confirmation sampling scheduled for spring 2023
MW-4	Antimony	**0.0032**	0.0020	ND (<0.0020)	Exceedance but not statistically significant

Notes:
Conc – Concentration
KM – Kaplan Meier method for non-detect substitution
Bolded concentration exceeds the respective USL.
ND – Not Detected

7 Groundwater Protection Standards

Per § 257.95(d)(2), Groundwater Protection Standards (GPS) were established for each Appendix IV constituent detected in the groundwater. GPS were established using United States Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for detected Appendix IV constituents. For constituents for which the background level is higher than the MCL, the background value will be the GPS. GPS values are shown in **Table 6**.

The following Appendix IV analytes were detected above established GPS values during the 2022 sampling events (**Table 7**).

Spring Sampling Event

- Cobalt (MW-3)
- Lithium (MW-1)

Summer Sampling Event

- Antimony (MW-2R, MW-3, MW-3R)
- Arsenic (MW-2R, MW-3)
- Cadmium (MW-2R, MW-3)
- Cobalt (MW-2R, MW-3)
- Lead (MW-2R, MW-3)
- Lithium (MW-1, MW-2R, MW-3)
- Molybdenum (MW-2R, MW-3)
- Selenium (MW-2R, MW-3)

- Thallium (MW-2R, MW-3, MW-3R)

Cobalt concentrations were detected above established GPS values at downgradient monitoring well MW-3 during the 2022 spring and summer sampling events. Lithium concentrations were detected above established GPS values at upgradient monitoring well MW-1 during the 2022 spring and summer sampling events. Thus, these exceedances were confirmed to be SSIs.

The remaining analytes were detected above established GPS values during the 2022 summer sampling event. Sampling will be conducted in the spring 2023 to determine if these analytes are SSIs.

8 Report Summary and Conclusions

Per 40 CFR §§ 40.257.93 – 257.95, 2 monitoring events (spring and fall) were conducted in 2022 at the SKB Lansing Landfill. Groundwater samples were collected from the monitoring network's 8 monitoring wells (MW-1, MW-1RD, MW-2R, MW-2RD, MW-3, MW-3R, MW-3RD, and MW-4) located at the SKB Lansing Landfill during the 2022 monitoring events. Groundwater samples were analyzed for parameters specified in Appendix III (detection monitoring) and Appendix IV (assessment monitoring).

The groundwater data collected in the 2017 – 2022 sampling events were statistically tested following the concepts outlined in this report to form a background data set. Interwell USLs were developed for Appendix III and Appendix IV in 8 monitoring wells. Upper and lower threshold values were developed for pH using USL and box plot statistics. The resulting USLs were compared to the current concentrations for each COC and well pair.

The following analytes were reported above the calculated BTVs in 2022:

<u>Appendix III Analytes</u>

- Boron concentrations reported above the BTV at downgradient monitoring well MW-2R during the spring and summer 2022 sampling events. These concentrations were confirmed exceedances.
- Chloride concentrations reported above the BTV at upgradient monitoring well MW-1 during the spring and summer 2022 sampling events. These concentrations were confirmed exceedances.

<u>Appendix IV Analytes</u>

- Antimony concentrations reported above the BTV at upgradient monitoring well MW-1 and downgradient monitoring well MW-4 during the spring 2022 sampling event. Subsequent confirmation sampling of the exceedances during the summer 2022 sampling events determined the exceedances were not statistically significant. Antimony concentration at downgradient monitoring well MW-3R were reported above the BTV. Confirmation sampling in the spring 2023 will determine if an SSI.
- Antimony, Arsenic, Cadmium, Lead, Lithium, Molybdenum, Selenium, and Thallium concentrations reported above the BTVs at downgradient monitoring wells MW-2R and MW-

3 during the summer 2022 sampling event. Confirmation sampling in the spring 2023 will determine if they are SSIs.

- Barium concentration reported above the BTV at a downgradient monitoring well MW-3R during the spring 2022 sampling event. Subsequent confirmation of the exceedance from the summer 2022 sampling event indicate it was not considered statistically significant.
- Cobalt concentrations reported above the BTV at downgradient monitoring well MW-3 during the spring and summer 2022 sampling events. These concentrations were confirmed exceedances. A Cobalt concentration reported above the BTV at a downgradient monitoring well MW-2R during the summer 2022 sampling event. Confirmation sampling in the spring 2023 will determine if an SSI.
- Lithium concentrations reported above the BTV at upgradient monitoring well MW-1 during the spring and summer 2022 sampling events. These concentrations were confirmed exceedances.
- Thallium concentration reported above BTV at downgradient monitoring well MW-3R during the summer 2022 sampling event. Confirmation sampling in the spring 2023 will determine if an SSI.

Groundwater concentrations from the 2022 monitoring events were compared to established GPS values. Cobalt concentrations were detected above established GPS values at downgradient monitoring well MW-3 during the 2022 spring and summer sampling events. Lithium concentrations were detected above established GPS values at upgradient monitoring well MW-1 during the 2022 spring and summer sampling events. These exceedances were confirmed to be SSIs. The detections of Lithium in an upgradient monitoring well indicates a source for Lithium that is separate from the landfill activities. Lithium presence in the monitoring well cannot be used as a marker for landfill impact on the surrounding groundwater.

9 Recommendations

Because Cobalt has been detected at downgradient monitoring well MW-3 at a statistically significant level exceeding the GPS defined under § 257.95(h), the following action is recommended:

1. Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a Report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program and may return to detection monitoring if the constituents in Appendix III and Appendix IV are at or below background values. The owner or operator must also include the demonstration in the 2023 Annual Monitoring Report required by § 257.90(e), in addition to the certification by

a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority.

The above Report will include a statistical evaluation of site groundwater quality data where water samples from site wells will be compared to landfill leachate samples. Preliminary statistical evaluation of current data indicates impacts to the aquifer is isolated to increased soil-derived carbonate, sulfate, and metal concentrations.

CCR groundwater monitoring events will be conducted in 2023 by the following schedule:

Spring 2023

Conduct a groundwater monitoring event of the site's monitoring well network and analyze groundwater samples for constituents listed in Appendix III and Appendix IV (full list).

Late Summer/Early Fall 2023

Conduct a groundwater monitoring event of the site's monitoring well network and analyzed samples for constituents listed in Appendix III and Appendix IV (only analytes detected in spring 2023 event).

An evaluation of groundwater analytical results after each monitoring event will be completed to determine if a significant increase over BTVs for one or more constituents sampled in Appendix III and Appendix IV has occurred at any monitoring well. The evaluation will be performed using a tolerance or prediction interval procedure (§ 257.93(f)(3)). The level of each constituent in the monitoring well will be compared to an established BTV generated as the USL. Any single constituent that exceeds the BTV is considered to be an exceedance. Confirmation sampling will determine whether the BTV exceedance is statistically significant. Additionally, groundwater concentrations of constituents listed in Appendix IV will be compared to the established GPS values.

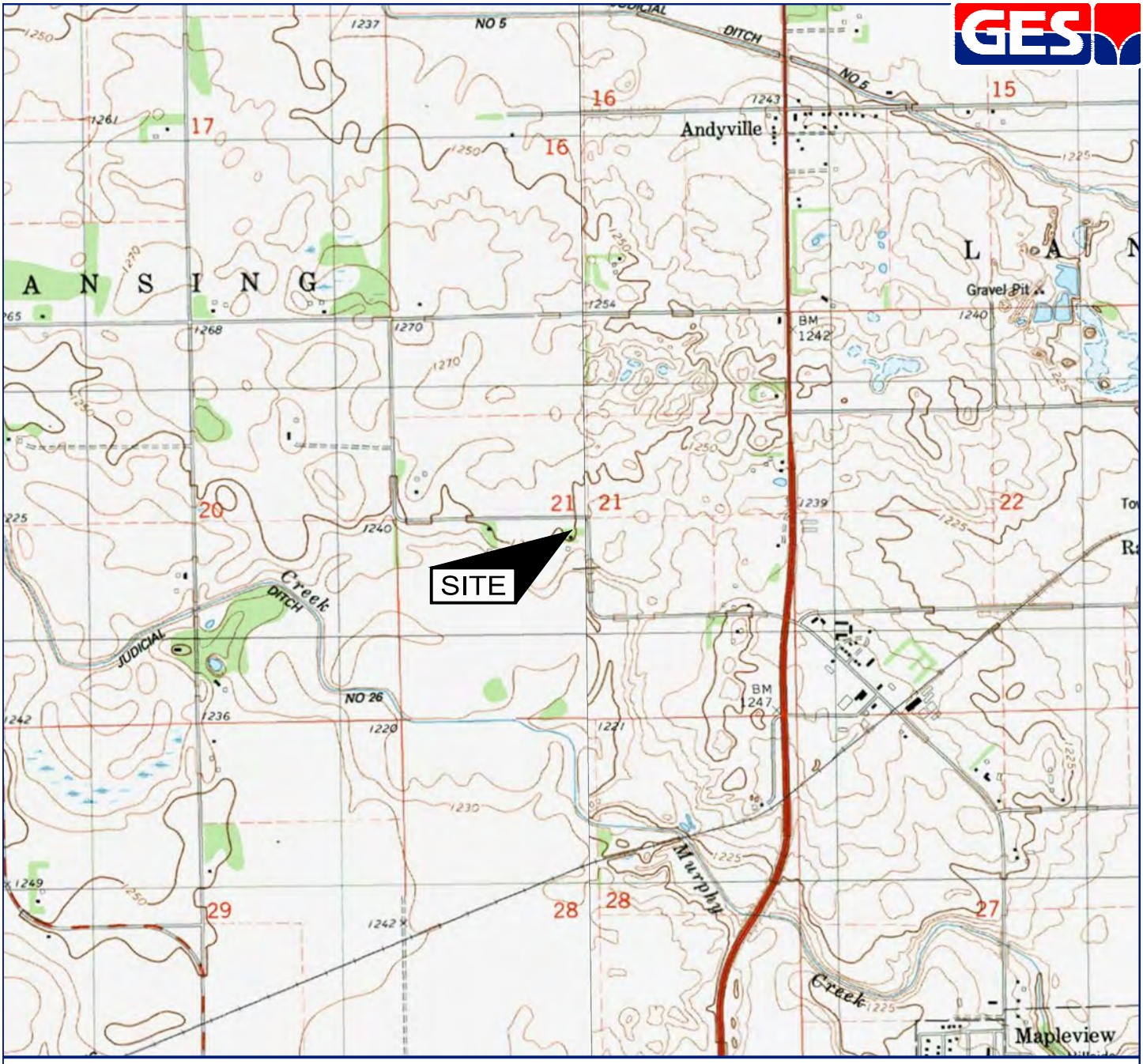
A 2023 Annual Monitoring Report will be prepared and include sampling results from the 2023 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTV and GPS values. Additionally, the Report generated as a result of the Appendix IV Cobalt SSI will be included in the 2023 Annual Monitoring Report.

References

Singh and Singh, 2013. *ProUCL Version 5.0.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations,* United States Environmental Protection Agency

United States Environmental Protection Agency, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance.* Office of Resource Conservation and Recovery Program Implementation and Information Division, EPA 530/R-09-007, March 2009.

Figures

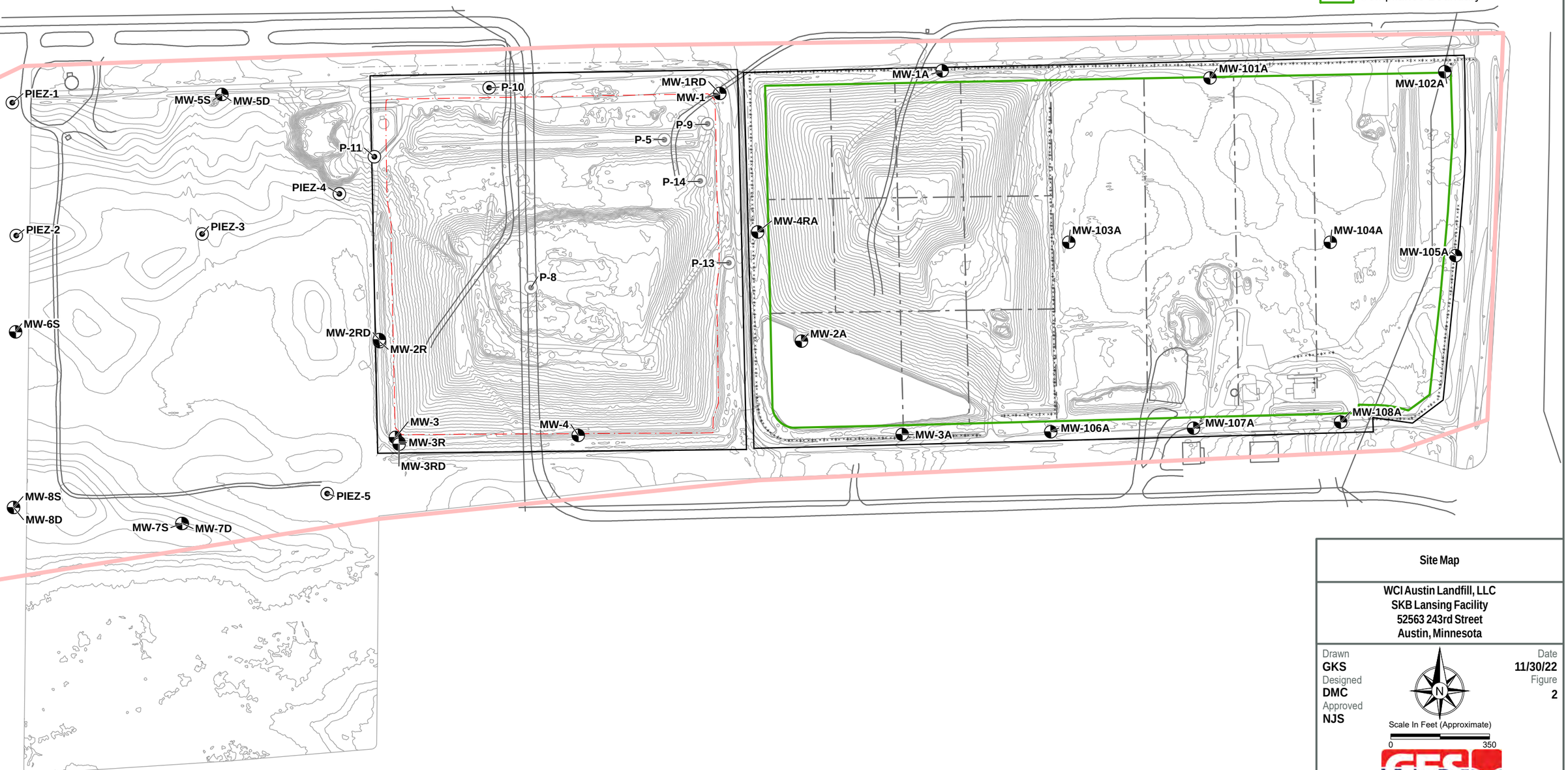


SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1982
AUSTIN EAST, MINNESOTA
CONTOUR INTERVAL = 5'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY: JFS	WCI AUSTIN LANDFILL LLC SKB LANSING LANDFILL 52563 243rd STREET AUSTIN, MINNESOTA
REVIEWED BY: JFS	Groundwater & Environmental Services, Inc. 1301 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 12-15-21 / FIGURE: 1

M:\Graphics\3500-Minnesota\SKB Environmental\Austin-Lansing facility(243rd st)\Austin SLM(243rd st).dwg, Layout1, WShea



L:\Projects\SKB Environmental\Combined Austin Landfills\GIS\SKB_Combined_Austin_Landfills_SM.mxd - Scale 1:4,200 - 11/30/2022 1:07:59 PM - GStewart - NAD 1983 StatePlane Minnesota South FIPS 2203 Feet

Site Map

WCI Austin Landfill, LLC
SKB Lansing Facility
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **NJS**

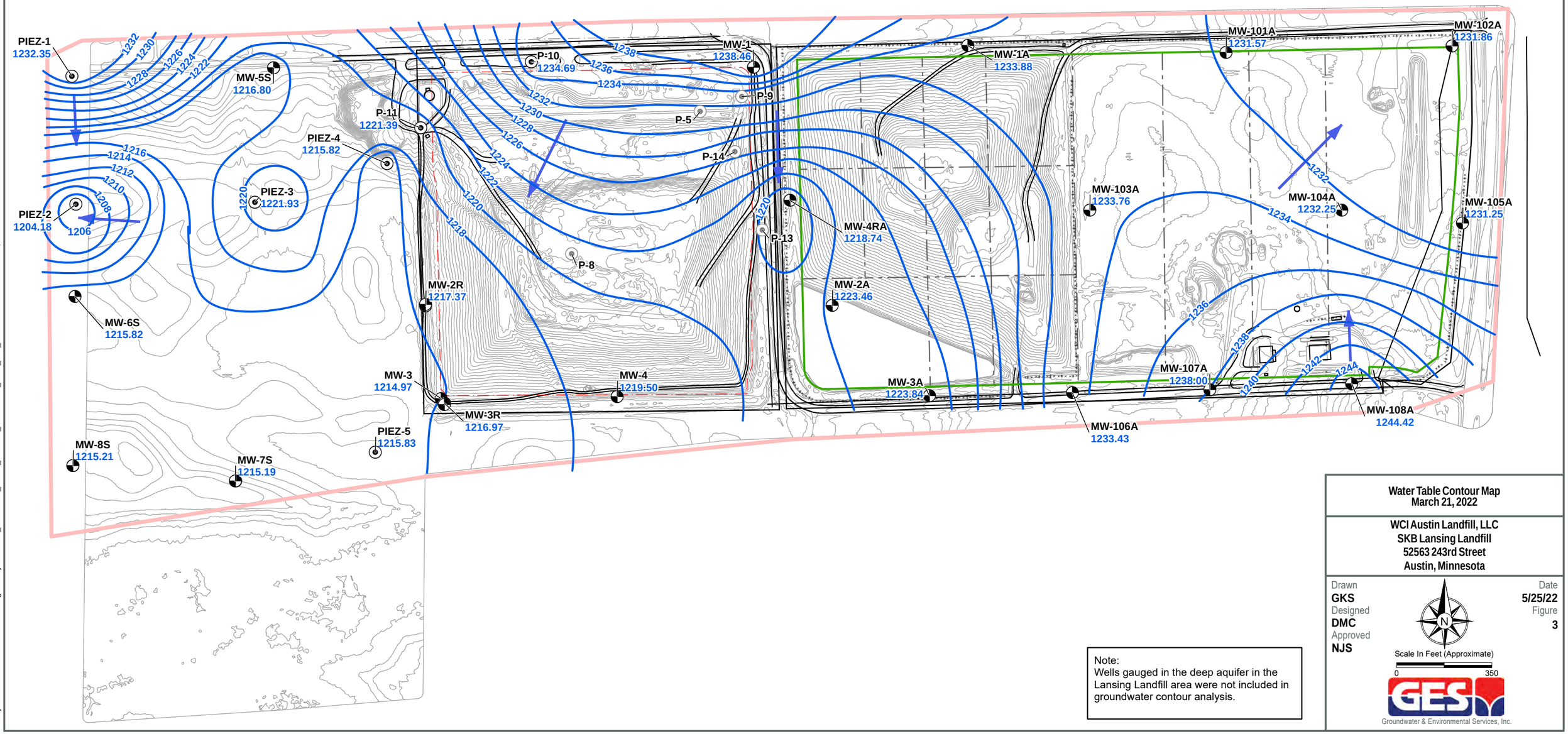
Date **11/30/22**
Figure **2**

Scale In Feet (Approximate)
0 350

Groundwater & Environmental Services, Inc.

Legend

- Monitoring Well
- Piezometer
- Removed Piezometer
- Property Boundary
- Fence
- Phase Boundary
- Approximate Limit of Waste
- Right of Way
- Compliance Boundary
- Approximate Flow Direction
- Groundwater Elevation Isocontour (ft MSL)



Note:
Wells gauged in the deep aquifer in the Lansing Landfill area were not included in groundwater contour analysis.

Water Table Contour Map
March 21, 2022

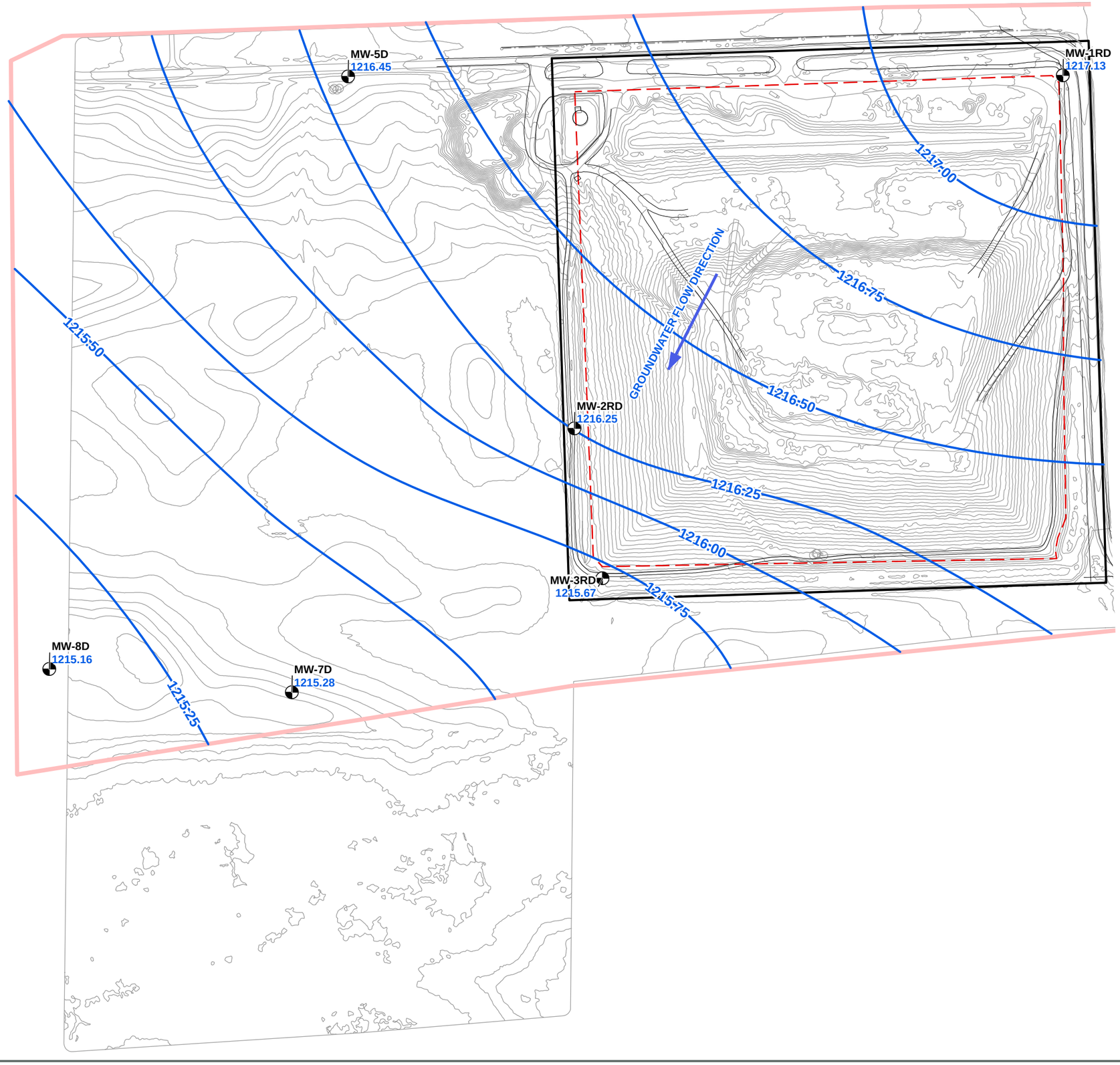
WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn	Date
GKS	**5/25/22**
Designed	Figure
DMC	**3**
Approved	
NJS	

Scale In Feet (Approximate)
0 350

Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\SKB_Combined_Austin_Landfills_WaterTable_CCR_GW_March2022.mxd - Scale 1:4,200 - 5/25/2022 5:55:07 PM - GStewart - NAD 1983 StatePlane Minnesota South FIPS 2203 Feet



LEGEND

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- RIGHT OF WAY
- APPROXIMATE LIMITS OF WASTE
- FENCE
- 1219.48 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- PIEZOMETER
- REMOVED PIEZOMETER

Potentiometric Surface Contour Map
Deep Zone - March 21, 2022

WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **NJS**

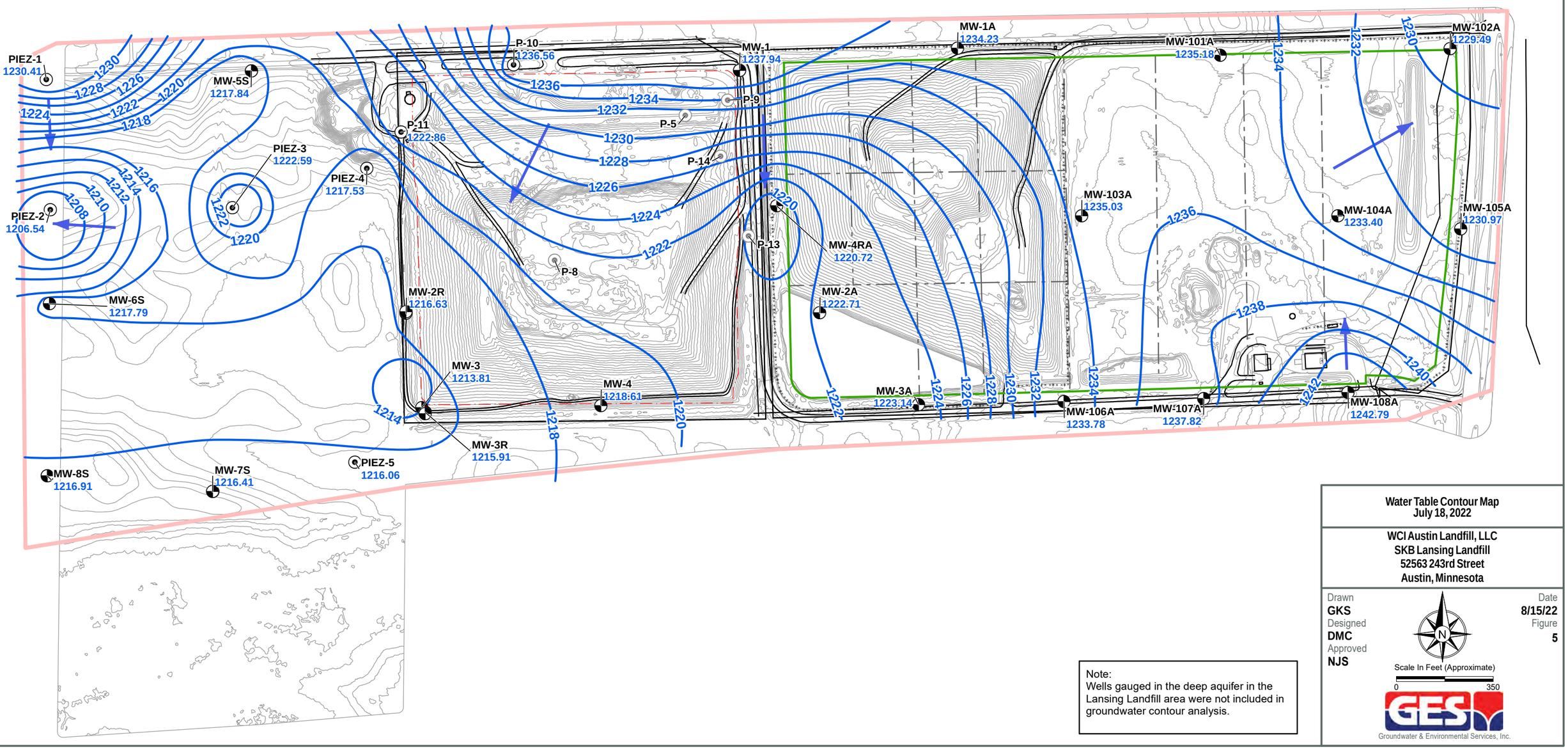
Date **5/25/22**
Figure **4**

N

Scale In Feet (Approximate)
0 250

Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\Lansing_GWE_Pot_Surface_March2022.mxd - Scale 1:3,000 - 5/25/2022 6:12:54 PM - GStewart - Part -



Note:
Wells gauged in the deep aquifer in the Lansing Landfill area were not included in groundwater contour analysis.

Water Table Contour Map
July 18, 2022

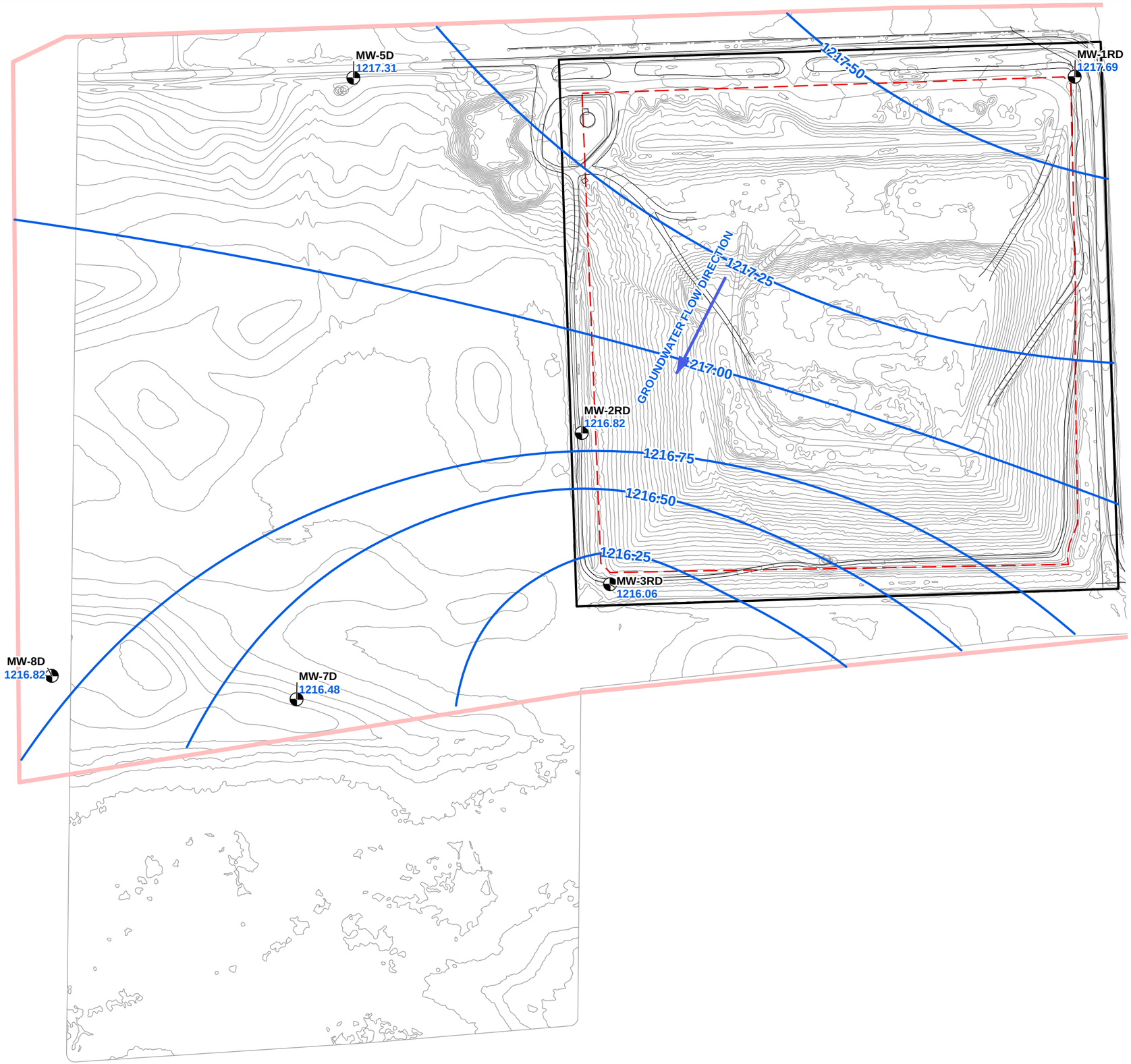
WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **NJS**
Date **8/15/22**
Figure **5**

Scale In Feet (Approximate)
0 350

Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\SKB_Combined_Austin_Landfills_WaterTable_CCR_GW_July2022.mxd - Scale 1:4,200 - 8/15/2022 11:31:54 AM - GStewart - NAD 1983 StatePlane Minnesota South FIPS 2203 Feet



LEGEND

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- RIGHT OF WAY
- APPROXIMATE LIMITS OF WASTE
- FENCE
- 1219.48 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- PIEZOMETER
- REMOVED PIEZOMETER

Potentiometric Surface Contour Map
Deep Zone - July 18, 2022

WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **NJS**

Date **8/15/22**
Figure **6**

N

Scale In Feet (Approximate)
0 250

GES
Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\Lansing_GWE_Pot_Surface_July2022.mxd - Scale 1:3,000 - 8/15/2022 11:40:17 AM - GStewart -

Tables

2022 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 1

Groundwater Elevations

Date	MW-1	MW-1RD	MW-2R	MW-2RD	MW-3	MW-3R	MW-3RD	MW-4
03/21/2022	1238.46	1217.13	1217.37	1216.25	1214.97	1216.97	1215.67	1219.50
07/18/2022	1237.94	1217.69	1216.63	1216.82	1213.81	1215.91	1216.06	1218.61

Date	MW-5D	MW-5S	MW-6S	MW-7D	MW-7S	MW-8D	MW-8S	MW-1A
03/21/2022	1216.45	1216.80	1215.82	1215.28	1215.19	1215.16	1215.21	1233.88
07/18/2022	1217.31	1217.84	1217.79	1216.48	1216.41	1216.82	1216.91	1234.23

Date	MW-2A	MW-3A	MW-4RA	MW-101A	MW-102A	MW-103A	MW-104A	MW-105A
03/21/2022	1223.46	1223.84	1218.74	1231.57	1231.86	1233.76	1232.25	1231.25
07/18/2022	1222.71	1223.14	1220.72	1235.18	1229.49	1235.03	1233.40	1230.97

Date	MW-106A	MW-107A	MW-108A	P-10	P-11	PIEZ-1	PIEZ-2	PIEZ-3
03/21/2022	1233.43	1238.00	1244.42	1234.69	1221.39	1232.35	1204.18	1221.93
07/18/2022	1233.78	1237.82	1242.79	1236.56	1222.86	1230.41	1206.54	1222.59

Date	PIEZ-4	PIEZ-5
03/21/2022	1215.82	1215.83
07/18/2022	1217.53	1216.06

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1	03-21-2022	Boron	0.25	3.4	mg/l	7440-42-8
MW-1	07-18-2022	Boron	0.21	3.4	mg/l	7440-42-8
MW-1	03-21-2022	Calcium	169	242	mg/l	7440-70-2
MW-1	07-18-2022	Calcium	170	242	mg/l	7440-70-2
MW-1	03-21-2022	Chloride	**260**	111.1	mg/l	16887-00-6
MW-1	07-18-2022	Chloride	**160**	111.1	mg/l	16887-00-6
MW-1	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1	03-21-2022	pH	7.2	6.5 - 7.7	pH UNITS	PH
MW-1	07-18-2022	pH	6.9	6.5 - 7.7	pH UNITS	PH
MW-1	03-21-2022	Sulfate as SO4	71	874.5	mg/l	14808-79-8
MW-1	07-18-2022	Sulfate as SO4	97	874.5	mg/l	14808-79-8
MW-1	03-21-2022	Total Dissolved Solids	672	1380	mg/l	TDS
MW-1	07-18-2022	Total Dissolved Solids	720	1380	mg/l	TDS
MW-1RD	03-21-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-1RD	07-18-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-1RD	03-21-2022	Calcium	77.0	242	mg/l	7440-70-2
MW-1RD	07-18-2022	Calcium	74.7	242	mg/l	7440-70-2
MW-1RD	03-21-2022	Chloride	24	111.1	mg/l	16887-00-6
MW-1RD	07-18-2022	Chloride	23	111.1	mg/l	16887-00-6
MW-1RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1RD	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1RD	03-21-2022	pH	7.5	6.5 - 7.7	pH UNITS	PH
MW-1RD	07-18-2022	pH	7.4	6.5 - 7.7	pH UNITS	PH
MW-1RD	03-21-2022	Sulfate as SO4	53	874.5	mg/l	14808-79-8
MW-1RD	07-18-2022	Sulfate as SO4	52	874.5	mg/l	14808-79-8
MW-1RD	03-21-2022	Total Dissolved Solids	290	1380	mg/l	TDS
MW-1RD	07-18-2022	Total Dissolved Solids	338	1380	mg/l	TDS
MW-2R	03-21-2022	Boron	**3.9**	3.4	mg/l	7440-42-8
MW-2R	07-18-2022	Boron	**3.8**	3.4	mg/l	7440-42-8
MW-2R	03-21-2022	Calcium	227	242	mg/l	7440-70-2
MW-2R	07-18-2022	Calcium	203	242	mg/l	7440-70-2
MW-2R	03-21-2022	Chloride	100	111.1	mg/l	16887-00-6
MW-2R	07-18-2022	Chloride	95	111.1	mg/l	16887-00-6
MW-2R	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2R	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2R	03-21-2022	pH	6.8	6.5 - 7.7	pH UNITS	PH
MW-2R	07-18-2022	pH	6.7	6.5 - 7.7	pH UNITS	PH
MW-2R	03-21-2022	Sulfate as SO4	230	874.5	mg/l	14808-79-8
MW-2R	07-18-2022	Sulfate as SO4	220	874.5	mg/l	14808-79-8
MW-2R	03-21-2022	Total Dissolved Solids	1160	1380	mg/l	TDS
MW-2R	07-18-2022	Total Dissolved Solids	1080	1380	mg/l	TDS
MW-2RD	03-21-2022	Boron	0.16	3.4	mg/l	7440-42-8
MW-2RD	07-18-2022	Boron	0.16	3.4	mg/l	7440-42-8
MW-2RD	03-21-2022	Calcium	144	242	mg/l	7440-70-2
MW-2RD	07-18-2022	Calcium	123	242	mg/l	7440-70-2
MW-2RD	03-21-2022	Chloride	42	111.1	mg/l	16887-00-6
MW-2RD	07-18-2022	Chloride	37	111.1	mg/l	16887-00-6
MW-2RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2RD	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2RD	03-21-2022	pH	7.1	6.5 - 7.7	pH UNITS	PH
MW-2RD	07-18-2022	pH	7.0	6.5 - 7.7	pH UNITS	PH
MW-2RD	03-21-2022	Sulfate as SO4	84	874.5	mg/l	14808-79-8
MW-2RD	07-18-2022	Sulfate as SO4	76	874.5	mg/l	14808-79-8
MW-2RD	03-21-2022	Total Dissolved Solids	554	1380	mg/l	TDS
MW-2RD	07-18-2022	Total Dissolved Solids	586	1380	mg/l	TDS
MW-3	03-21-2022	Boron	0.60	3.4	mg/l	7440-42-8
MW-3	07-19-2022	Boron	0.22	3.4	mg/l	7440-42-8
MW-3	03-21-2022	Calcium	229	242	mg/l	7440-70-2

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-3	07-19-2022	Calcium	228	242	mg/l	7440-70-2
MW-3	03-21-2022	Chloride	46	111.1	mg/l	16887-00-6
MW-3	07-19-2022	Chloride	24	111.1	mg/l	16887-00-6
MW-3	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3	03-21-2022	pH	6.7	6.5 - 7.7	pH UNITS	PH
MW-3	07-19-2022	pH	6.6	6.5 - 7.7	pH UNITS	PH
MW-3	03-21-2022	Sulfate as SO4	22	874.5	mg/l	14808-79-8
MW-3	07-19-2022	Sulfate as SO4	15	874.5	mg/l	14808-79-8
MW-3	03-21-2022	Total Dissolved Solids	928	1380	mg/l	TDS
MW-3	07-19-2022	Total Dissolved Solids	896	1380	mg/l	TDS
MW-3R	03-21-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-3R	07-19-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-3R	03-21-2022	Calcium	233	242	mg/l	7440-70-2
MW-3R	07-19-2022	Calcium	213	242	mg/l	7440-70-2
MW-3R	03-21-2022	Chloride	22	111.1	mg/l	16887-00-6
MW-3R	07-19-2022	Chloride	23	111.1	mg/l	16887-00-6
MW-3R	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3R	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3R	03-21-2022	pH	6.7	6.5 - 7.7	pH UNITS	PH
MW-3R	07-19-2022	pH	6.6	6.5 - 7.7	pH UNITS	PH
MW-3R	03-21-2022	Sulfate as SO4	8.1	874.5	mg/l	14808-79-8
MW-3R	07-19-2022	Sulfate as SO4	5.0	874.5	mg/l	14808-79-8
MW-3R	03-21-2022	Total Dissolved Solids	790	1380	mg/l	TDS
MW-3R	07-19-2022	Total Dissolved Solids	846	1380	mg/l	TDS
MW-3RD	03-21-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-3RD	07-19-2022	Boron	< 0.10	3.4	mg/l	7440-42-8
MW-3RD	03-21-2022	Calcium	119	242	mg/l	7440-70-2
MW-3RD	07-19-2022	Calcium	108	242	mg/l	7440-70-2
MW-3RD	03-21-2022	Chloride	24	111.1	mg/l	16887-00-6
MW-3RD	07-19-2022	Chloride	27	111.1	mg/l	16887-00-6
MW-3RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3RD	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3RD	03-21-2022	pH	7.2	6.5 - 7.7	pH UNITS	PH
MW-3RD	07-19-2022	pH	7.1	6.5 - 7.7	pH UNITS	PH
MW-3RD	03-21-2022	Sulfate as SO4	75	874.5	mg/l	14808-79-8
MW-3RD	07-19-2022	Sulfate as SO4	83	874.5	mg/l	14808-79-8
MW-3RD	03-21-2022	Total Dissolved Solids	470	1380	mg/l	TDS
MW-3RD	07-19-2022	Total Dissolved Solids	508	1380	mg/l	TDS
MW-4	03-21-2022	Boron	0.25	3.4	mg/l	7440-42-8
MW-4	07-19-2022	Boron	0.47	3.4	mg/l	7440-42-8
MW-4	03-21-2022	Calcium	208	242	mg/l	7440-70-2
MW-4	07-19-2022	Calcium	191	242	mg/l	7440-70-2
MW-4	03-21-2022	Chloride	27	111.1	mg/l	16887-00-6
MW-4	07-19-2022	Chloride	41	111.1	mg/l	16887-00-6
MW-4	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-4	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-4	03-21-2022	pH	6.9	6.5 - 7.7	pH UNITS	PH
MW-4	07-19-2022	pH	6.8	6.5 - 7.7	pH UNITS	PH
MW-4	03-21-2022	Sulfate as SO4	210	874.5	mg/l	14808-79-8
MW-4	07-19-2022	Sulfate as SO4	230	874.5	mg/l	14808-79-8
MW-4	03-21-2022	Total Dissolved Solids	840	1380	mg/l	TDS
MW-4	07-19-2022	Total Dissolved Solids	906	1380	mg/l	TDS

Results in milligrams per liter (mg/l)

Bold = Indicates concentration above Background Threshold Value

2022 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1	03-21-2022	Antimony	**0.0022**	0.0020	mg/l	7440-36-0
MW-1	07-18-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-1	03-21-2022	Arsenic	0.0022	0.0259	mg/l	7440-38-2
MW-1	07-18-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1	03-21-2022	Barium	0.14	0.6	mg/l	7440-39-3
MW-1	07-18-2022	Barium	0.15	0.6	mg/l	7440-39-3
MW-1	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-1	03-21-2022	Cadmium	0.00099	0.0502	mg/l	7440-43-9
MW-1	07-18-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-1	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-1	03-21-2022	Cobalt	0.00099	0.0081	mg/l	7440-48-4
MW-1	07-18-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-1	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1	03-21-2022	Lead	0.0018	0.0179	mg/l	7439-92-1
MW-1	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1	03-21-2022	Lithium	**0.087**	0.0455	mg/l	7439-93-2
MW-1	07-18-2022	Lithium	**0.046**	0.0455	mg/l	7439-93-2
MW-1	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-1	03-21-2022	Molybdenum	0.0020	0.0222	mg/l	7439-98-7
MW-1	07-18-2022	Molybdenum	< 0.0020	0.0222	mg/l	7439-98-7
MW-1	03-21-2022	Radium 226	< 0.279	1.671	pci/l	13982-63-3
MW-1	07-18-2022	Radium 226	< 0.175	1.671	pci/l	13982-63-3
MW-1	03-21-2022	Radium 228	< 0.388	2.243	pci/l	15262-20-1
MW-1	07-18-2022	Radium 228	< 1.08	2.243	pci/l	15262-20-1
MW-1	03-21-2022	Radium-226/228	< 0.388	3.914	pci/l	425
MW-1	07-18-2022	Radium-226/228	< 1.08	3.914	pci/l	425
MW-1	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-1	07-18-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-1	03-21-2022	Thallium	0.0032	0.0102	mg/l	7440-28-0
MW-1	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-1RD	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-1RD	07-18-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-1RD	03-21-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1RD	07-18-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1RD	03-21-2022	Barium	0.15	0.6	mg/l	7440-39-3
MW-1RD	07-18-2022	Barium	0.14	0.6	mg/l	7440-39-3
MW-1RD	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-1RD	03-21-2022	Cadmium	0.00044	0.0502	mg/l	7440-43-9
MW-1RD	07-18-2022	Cadmium	0.00013	0.0502	mg/l	7440-43-9
MW-1RD	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-1RD	03-21-2022	Cobalt	0.0011	0.0081	mg/l	7440-48-4
MW-1RD	07-18-2022	Cobalt	0.00073	0.0081	mg/l	7440-48-4
MW-1RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1RD	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-1RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1RD	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1RD	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-1RD	07-18-2022	Lithium	0.014	0.0455	mg/l	7439-93-2
MW-1RD	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-1RD	03-21-2022	Molybdenum	0.0032	0.0222	mg/l	7439-98-7
MW-1RD	07-18-2022	Molybdenum	0.0029	0.0222	mg/l	7439-98-7
MW-1RD	03-21-2022	Radium 226	0.389	1.671	pci/l	13982-63-3

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Groundwater Analytical Data
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Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1RD	07-18-2022	Radium 226	0.331	1.671	pci/l	13982-63-3
MW-1RD	03-21-2022	Radium 228	0.693	2.243	pci/l	15262-20-1
MW-1RD	07-18-2022	Radium 228	0.736	2.243	pci/l	15262-20-1
MW-1RD	03-21-2022	Radium-226/228	1.08	3.914	pci/l	425
MW-1RD	07-18-2022	Radium-226/228	1.07	3.914	pci/l	425
MW-1RD	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-1RD	07-18-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-1RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-1RD	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2R	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-2R	07-18-2022	Antimony	**0.20**	0.0020	mg/l	7440-36-0
MW-2R	03-21-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-2R	07-18-2022	Arsenic	**0.19**	0.0259	mg/l	7440-38-2
MW-2R	03-21-2022	Barium	0.27	0.6	mg/l	7440-39-3
MW-2R	07-18-2022	Barium	0.24	0.6	mg/l	7440-39-3
MW-2R	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-2R	03-21-2022	Cadmium	0.00013	0.0502	mg/l	7440-43-9
MW-2R	07-18-2022	Cadmium	**0.093**	0.0502	mg/l	7440-43-9
MW-2R	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-2R	03-21-2022	Cobalt	0.0020	0.0081	mg/l	7440-48-4
MW-2R	07-18-2022	Cobalt	**0.087**	0.0081	mg/l	7440-48-4
MW-2R	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2R	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2R	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2R	07-18-2022	Lead	**0.19**	0.0179	mg/l	7439-92-1
MW-2R	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-2R	07-18-2022	Lithium	**0.19**	0.0455	mg/l	7439-93-2
MW-2R	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-2R	03-21-2022	Molybdenum	0.0022	0.0222	mg/l	7439-98-7
MW-2R	07-18-2022	Molybdenum	**0.19**	0.0222	mg/l	7439-98-7
MW-2R	03-21-2022	Radium 226	< 0.502	1.671	pci/l	13982-63-3
MW-2R	07-18-2022	Radium 226	0.327	1.671	pci/l	13982-63-3
MW-2R	03-21-2022	Radium 228	0.564	2.243	pci/l	15262-20-1
MW-2R	07-18-2022	Radium 228	< 0.675	2.243	pci/l	15262-20-1
MW-2R	03-21-2022	Radium-226/228	0.918	3.914	pci/l	425
MW-2R	07-18-2022	Radium-226/228	0.977	3.914	pci/l	425
MW-2R	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-2R	07-18-2022	Selenium	**0.36**	0.034	mg/l	7782-49-2
MW-2R	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2R	07-18-2022	Thallium	**0.18**	0.0102	mg/l	7440-28-0
MW-2RD	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-2RD	07-18-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-2RD	03-21-2022	Arsenic	0.0025	0.0259	mg/l	7440-38-2
MW-2RD	07-18-2022	Arsenic	0.0037	0.0259	mg/l	7440-38-2
MW-2RD	03-21-2022	Barium	0.20	0.6	mg/l	7440-39-3
MW-2RD	07-18-2022	Barium	0.16	0.6	mg/l	7440-39-3
MW-2RD	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-2RD	03-21-2022	Cadmium	0.00048	0.0502	mg/l	7440-43-9
MW-2RD	07-18-2022	Cadmium	0.00015	0.0502	mg/l	7440-43-9
MW-2RD	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-2RD	03-21-2022	Cobalt	0.0030	0.0081	mg/l	7440-48-4
MW-2RD	07-18-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-2RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8

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Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-2RD	07-18-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-2RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2RD	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2RD	03-21-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-2RD	07-18-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-2RD	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-2RD	03-21-2022	Molybdenum	0.0026	0.0222	mg/l	7439-98-7
MW-2RD	07-18-2022	Molybdenum	0.0038	0.0222	mg/l	7439-98-7
MW-2RD	03-21-2022	Radium 226	0.868	1.671	pci/l	13982-63-3
MW-2RD	07-18-2022	Radium 226	0.525	1.671	pci/l	13982-63-3
MW-2RD	03-21-2022	Radium 228	< 0.934	2.243	pci/l	15262-20-1
MW-2RD	07-18-2022	Radium 228	0.631	2.243	pci/l	15262-20-1
MW-2RD	03-21-2022	Radium-226/228	1.74	3.914	pci/l	425
MW-2RD	07-18-2022	Radium-226/228	1.16	3.914	pci/l	425
MW-2RD	03-21-2022	Selenium	0.024	0.034	mg/l	7782-49-2
MW-2RD	07-18-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-2RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2RD	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-3	07-19-2022	Antimony	**0.21**	0.0020	mg/l	7440-36-0
MW-3	03-21-2022	Arsenic	0.0063	0.0259	mg/l	7440-38-2
MW-3	07-19-2022	Arsenic	**0.20**	0.0259	mg/l	7440-38-2
MW-3	03-21-2022	Barium	0.34	0.6	mg/l	7440-39-3
MW-3	07-19-2022	Barium	0.33	0.6	mg/l	7440-39-3
MW-3	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-3	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3	07-19-2022	Cadmium	**0.099**	0.0502	mg/l	7440-43-9
MW-3	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-3	03-21-2022	Cobalt	**0.0087**	0.0081	mg/l	7440-48-4
MW-3	07-19-2022	Cobalt	**0.093**	0.0081	mg/l	7440-48-4
MW-3	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3	07-19-2022	Lead	**0.20**	0.0179	mg/l	7439-92-1
MW-3	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-3	07-19-2022	Lithium	**0.20**	0.0455	mg/l	7439-93-2
MW-3	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-3	03-21-2022	Molybdenum	0.0058	0.0222	mg/l	7439-98-7
MW-3	07-19-2022	Molybdenum	**0.21**	0.0222	mg/l	7439-98-7
MW-3	03-21-2022	Radium 226	0.464	1.671	pci/l	13982-63-3
MW-3	07-19-2022	Radium 226	0.554	1.671	pci/l	13982-63-3
MW-3	03-21-2022	Radium 228	< 0.522	2.243	pci/l	15262-20-1
MW-3	07-19-2022	Radium 228	1.46	2.243	pci/l	15262-20-1
MW-3	03-21-2022	Radium-226/228	0.938	3.914	pci/l	425
MW-3	07-19-2022	Radium-226/228	2.02	3.914	pci/l	425
MW-3	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-3	07-19-2022	Selenium	**0.39**	0.034	mg/l	7782-49-2
MW-3	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3	07-19-2022	Thallium	**0.20**	0.0102	mg/l	7440-28-0
MW-3R	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-3R	07-19-2022	Antimony	**0.018**	0.0020	mg/l	7440-36-0
MW-3R	03-21-2022	Arsenic	0.0026	0.0259	mg/l	7440-38-2
MW-3R	07-19-2022	Arsenic	0.019	0.0259	mg/l	7440-38-2

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Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-3R	03-21-2022	Barium	**0.63**	0.6	mg/l	7440-39-3
MW-3R	07-19-2022	Barium	0.57	0.6	mg/l	7440-39-3
MW-3R	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-3R	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3R	07-19-2022	Cadmium	0.0087	0.0502	mg/l	7440-43-9
MW-3R	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-3R	03-21-2022	Cobalt	0.00053	0.0081	mg/l	7440-48-4
MW-3R	07-19-2022	Cobalt	0.0081	0.0081	mg/l	7440-48-4
MW-3R	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3R	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3R	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3R	07-19-2022	Lead	0.017	0.0179	mg/l	7439-92-1
MW-3R	03-21-2022	Lithium	0.019	0.0455	mg/l	7439-93-2
MW-3R	07-19-2022	Lithium	0.019	0.0455	mg/l	7439-93-2
MW-3R	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-3R	03-21-2022	Molybdenum	< 0.0020	0.0222	mg/l	7439-98-7
MW-3R	07-19-2022	Molybdenum	0.021	0.0222	mg/l	7439-98-7
MW-3R	03-21-2022	Radium 226	0.588	1.671	pci/l	13982-63-3
MW-3R	07-19-2022	Radium 226	0.723	1.671	pci/l	13982-63-3
MW-3R	03-21-2022	Radium 228	< 0.485	2.243	pci/l	15262-20-1
MW-3R	07-19-2022	Radium 228	1.17	2.243	pci/l	15262-20-1
MW-3R	03-21-2022	Radium-226/228	0.990	3.914	pci/l	425
MW-3R	07-19-2022	Radium-226/228	1.90	3.914	pci/l	425
MW-3R	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-3R	07-19-2022	Selenium	0.034	0.034	mg/l	7782-49-2
MW-3R	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3R	07-19-2022	Thallium	**0.023**	0.0102	mg/l	7440-28-0
MW-3RD	03-21-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-3RD	07-19-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-3RD	03-21-2022	Arsenic	0.0038	0.0259	mg/l	7440-38-2
MW-3RD	07-19-2022	Arsenic	0.0035	0.0259	mg/l	7440-38-2
MW-3RD	03-21-2022	Barium	0.21	0.6	mg/l	7440-39-3
MW-3RD	07-19-2022	Barium	0.18	0.6	mg/l	7440-39-3
MW-3RD	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-3RD	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3RD	07-19-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3RD	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-3RD	03-21-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-3RD	07-19-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-3RD	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3RD	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-3RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3RD	07-19-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3RD	03-21-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-3RD	07-19-2022	Lithium	0.011	0.0455	mg/l	7439-93-2
MW-3RD	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-3RD	03-21-2022	Molybdenum	0.0036	0.0222	mg/l	7439-98-7
MW-3RD	07-19-2022	Molybdenum	0.0037	0.0222	mg/l	7439-98-7
MW-3RD	03-21-2022	Radium 226	0.538	1.671	pci/l	13982-63-3
MW-3RD	07-19-2022	Radium 226	0.671	1.671	pci/l	13982-63-3
MW-3RD	03-21-2022	Radium 228	0.403	2.243	pci/l	15262-20-1
MW-3RD	07-19-2022	Radium 228	1.19	2.243	pci/l	15262-20-1
MW-3RD	03-21-2022	Radium-226/228	0.941	3.914	pci/l	425

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Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-3RD	07-19-2022	Radium-226/228	1.86	3.914	pci/l	425
MW-3RD	03-21-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-3RD	07-19-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-3RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3RD	07-19-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-4	03-21-2022	Antimony	**0.0032**	0.0020	mg/l	7440-36-0
MW-4	07-19-2022	Antimony	< 0.0020	0.0020	mg/l	7440-36-0
MW-4	03-21-2022	Arsenic	0.0035	0.0259	mg/l	7440-38-2
MW-4	07-19-2022	Arsenic	0.0022	0.0259	mg/l	7440-38-2
MW-4	03-21-2022	Barium	0.23	0.6	mg/l	7440-39-3
MW-4	07-19-2022	Barium	0.24	0.6	mg/l	7440-39-3
MW-4	03-21-2022	Beryllium	< 0.0010	0.0010	mg/l	7440-41-7
MW-4	03-21-2022	Cadmium	0.0013	0.0502	mg/l	7440-43-9
MW-4	07-19-2022	Cadmium	0.00015	0.0502	mg/l	7440-43-9
MW-4	03-21-2022	Chromium	< 0.0050	0.0050	mg/l	7440-47-3
MW-4	03-21-2022	Cobalt	0.0013	0.0081	mg/l	7440-48-4
MW-4	07-19-2022	Cobalt	0.00077	0.0081	mg/l	7440-48-4
MW-4	03-21-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-4	07-19-2022	Fluoride	< 0.50	0.352	mg/l	16984-48-8
MW-4	03-21-2022	Lead	0.0019	0.0179	mg/l	7439-92-1
MW-4	07-19-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-4	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-4	07-19-2022	Lithium	0.017	0.0455	mg/l	7439-93-2
MW-4	03-21-2022	Mercury	< 0.00020	0.00020	mg/l	7439-97-6
MW-4	03-21-2022	Molybdenum	0.0038	0.0222	mg/l	7439-98-7
MW-4	07-19-2022	Molybdenum	< 0.0020	0.0222	mg/l	7439-98-7
MW-4	03-21-2022	Radium 226	< 0.325	1.671	pci/l	13982-63-3
MW-4	07-19-2022	Radium 226	0.284	1.671	pci/l	13982-63-3
MW-4	03-21-2022	Radium 228	0.371	2.243	pci/l	15262-20-1
MW-4	07-19-2022	Radium 228	0.497	2.243	pci/l	15262-20-1
MW-4	03-21-2022	Radium-226/228	0.531	3.914	pci/l	425
MW-4	07-19-2022	Radium-226/228	0.781	3.914	pci/l	425
MW-4	03-21-2022	Selenium	0.0052	0.034	mg/l	7782-49-2
MW-4	07-19-2022	Selenium	< 0.0050	0.034	mg/l	7782-49-2
MW-4	03-21-2022	Thallium	0.0034	0.0102	mg/l	7440-28-0
MW-4	07-19-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)
Bold = Indicates concentration above Background Threshold Value

Table 4

Well Stabilization Data

Well ID	Sample Date	Purge Rate ml/min	Purge Volume gal	Field pH pH	Field Specific Conductivity umhos/cm	Field Temp deg c	Dissolved Oxygen mg/l	Turbidity NTU	Eh mV
MW-1	3/21/2022	1000	0.1	6.85	904	11.91	0.00	0.0	27
MW-1	3/21/2022	1000	3	6.93	941	12.04	0.00	0.0	42
MW-1	3/21/2022	1000	6	7.15	978	12.09	0.00	0.0	69
MW-1	3/21/2022	1000	9.5	6.86	1130	11.36	0.00	0.0	96
MW-1	3/21/2022			6.92	1150	11.21	0.00	0.0	99
MW-1	7/18/2022	1000	0.1	7.40	1270	14.64	11.74	24.0	111
MW-1	7/18/2022	1000	3	7.23	1240	12.71	5.17	21.0	120
MW-1	7/18/2022	1000	6	7.22	1260	12.63	4.08	17.1	119
MW-1	7/18/2022	1000	9.5	7.10	1270	12.50	0.63	18.1	120
MW-1	7/18/2022			7.15	1270	12.50	0.61	17.9	121
MW-1RD	3/21/2022	1000	0.1	6.97	549	12.37	2.42	0.0	155
MW-1RD	3/21/2022	1000	10	7.27	605	10.00	1.47	0.0	-37
MW-1RD	3/21/2022	1000	20	7.22	591	9.88	0.00	0.0	-51
MW-1RD	3/21/2022	1000	25	7.22	591	9.89	0.00	0.0	-51
MW-1RD	3/21/2022			7.23	591	9.86	0.00	0.0	-52
MW-1RD	7/18/2022	1000	0.1	7.66	596	10.70	1.62	34.4	4
MW-1RD	7/18/2022	1000	10	7.54	613	10.03	0.00	21.2	-76
MW-1RD	7/18/2022	1000	20	7.43	613	9.74	0.00	22.4	-68
MW-1RD	7/18/2022	1000	23.5	7.60	614	9.72	0.00	19.4	-66
MW-1RD	7/18/2022			7.49	614	9.69	0.00	19.2	-62
MW-2R	3/21/2022	1000	0.1	7.37	1700	8.40	4.04	18.6	-49
MW-2R	3/21/2022	1000	0.5	7.39	1680	8.43	2.96	12.6	-46
MW-2R	3/21/2022	1000	1	7.43	1670	8.22	3.02	6.1	-42
MW-2R	3/21/2022	1000	1.5	7.45	1660	8.07	3.11	2.2	-38
MW-2R	3/21/2022			7.49	1660	7.94	3.08	0.0	-33
MW-2R	7/18/2022	1000	0.1	7.07	1640	15.08	8.19	94.0	-68
MW-2R	7/18/2022	1000	0.5	6.91	1660	14.17	1.33	55.0	-49
MW-2R	7/18/2022	1000	1	6.90	1660	14.27	1.22	52.6	-48
MW-2R	7/18/2022	1000	1.5	6.90	1660	14.32	1.14	50.3	-47
MW-2R	7/18/2022			6.89	1660	14.58	1.02	46.8	-44
MW-2RD	3/21/2022	1000	0.1	8.19	980	10.31	3.39	0.0	24
MW-2RD	3/21/2022	1000	4	8.01	990	10.65	2.40	0.0	36
MW-2RD	3/21/2022	1000	8	7.40	1010	11.47	0.00	0.0	31
MW-2RD	3/21/2022	1000	12.5	7.40	1000	11.47	0.00	0.0	31
MW-2RD	3/21/2022			7.39	1010	11.47	0.00	0.0	30
MW-2RD	7/18/2022	1000	0.1	7.28	899	11.94	5.40	44.7	-24
MW-2RD	7/18/2022	1000	4	7.34	858	10.29	0.00	63.4	9
MW-2RD	7/18/2022	1000	8	7.25	987	10.23	0.00	39.0	9
MW-2RD	7/18/2022	1000	12.5	7.27	1000	10.19	0.00	34.8	2
MW-2RD	7/18/2022			7.27	1000	10.19	0.00	34.8	2
MW-3	3/21/2022	1000	0.1	7.98	1480	8.74	11.06	0.0	-58
MW-3	3/21/2022	1000	2	7.70	1480	8.78	5.05	0.0	-57
MW-3	3/21/2022	1000	4	8.02	1470	8.67	6.14	0.0	-56
MW-3	3/21/2022	1000	5	8.09	1480	8.60	5.87	0.0	-56
MW-3	3/21/2022			8.20	1480	8.66	5.07	0.0	-57
MW-3	7/19/2022	1000	0.1	9.39	1400	13.55	5.23	866	-96
MW-3	7/19/2022	1000	2	8.44	1380	10.96	0.00	97.0	-83
MW-3	7/19/2022	1000	4	7.99	1460	10.32	0.00	40.9	-86
MW-3	7/19/2022	1000	5.5	7.71	1470	10.12	0.00	40.0	-86
MW-3	7/19/2022			7.70	1470	10.12	0.00	40.2	-86

Table 4

Well Stabilization Data

Well ID	Sample Date	Purge Rate ml/min	Purge Volume gal	Field pH pH	Field Specific Conductivity umhos/cm	Field Temp deg c	Dissolved Oxygen mg/l	Turbidity NTU	Eh mV
MW-3R	3/21/2022	1000	0.1	6.65	1360	10.57	2.16	232	-70
MW-3R	3/21/2022	1000	3	6.86	1370	9.97	0.96	32.7	-95
MW-3R	3/21/2022	1000	6	7.16	140	9.90	4.02	0.0	-105
MW-3R	3/21/2022	1000	9.5	7.10	1390	9.89	3.28	0.0	-109
MW-3R	3/21/2022			7.14	1400	9.81	3.91	0.0	-109
MW-3R	7/19/2022	1000	0.1	7.85	1370	10.90	14.65	237	-55
MW-3R	7/19/2022	1000	3	7.41	1400	9.36	0.00	62.2	-100
MW-3R	7/19/2022	1000	6	7.27	1430	9.35	0.23	29.3	-113
MW-3R	7/19/2022	1000	9	7.19	1440	9.26	0.00	24.0	-114
MW-3R	7/19/2022			7.18	1440	9.26	0.00	25.9	-114
MW-3RD	3/21/2022	1000	0.1	8.99	20	9.55	9.51	124	-67
MW-3RD	3/21/2022	1000	6	8.13	14	9.56	9.52	129	-65
MW-3RD	3/21/2022	1000	12	7.42	9	9.52	8.88	124	-59
MW-3RD	3/21/2022	1000	18	7.25	11	9.50	8.84	131	-57
MW-3RD	3/21/2022			7.23	11	9.50	8.75	137	-58
MW-3RD	7/19/2022	1000	0.1	7.70	865	10.31	2.93	337	-100
MW-3RD	7/19/2022	1000	6	7.47	878	9.92	0.00	59.2	-72
MW-3RD	7/19/2022	1000	12	7.48	881	9.91	0.00	37.2	-75
MW-3RD	7/19/2022	1000	18.5	7.46	885	9.89	0.00	32.7	-78
MW-3RD	7/19/2022			7.45	884	9.89	0.00	34.0	-77
MW-4	3/21/2022	1000	0.1	9.08	551	12.75	6.27	0.0	69
MW-4	3/21/2022	1000	2	7.50	1210	10.72	0.00	0.0	98
MW-4	3/21/2022	1000	4	7.56	1230	9.71	0.00	0.0	101
MW-4	3/21/2022	1000	6	6.98	1240	9.11	0.00	0.0	103
MW-4	3/21/2022			6.93	1250	9.03	0.00	0.0	104
MW-4	7/19/2022	1000	0.1	7.47	1280	13.57	5.62	25.7	26
MW-4	7/19/2022	1000	2	7.23	1350	12.64	0.00	18.5	52
MW-4	7/19/2022	1000	4	7.20	1350	13.27	0.00	18.5	59
MW-4	7/19/2022	1000	5.5	7.17	1350	13.23	0.00	19.9	64
MW-4	7/19/2022			7.16	1350	13.24	0.00	20.0	64

Table 5

Background Threshold Values

Appendix III to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	3.4	mg/l	7440-42-8
Calcium	242	mg/l	7440-70-2
Chloride	111.1	mg/l	16887-00-6
Fluoride	0.352	mg/l	15984-48-8
pH	lower 6.5 higher 7.7	pH UNITS	PH
Sulfate as SO4	874.5	mg/l	14808-79-8
Total Dissolved Solids	1380	mg/l	TDS

Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Antimony	0.0020	mg/l	7440-36-0
Arsenic	0.0259	mg/l	7440-38-2
Barium	0.6	mg/l	7440-39-3
Beryllium	0.0010	mg/l	7440-41-7
Cadmium	0.0502	mg/l	7440-43-9
Chromium	0.0050	mg/l	7440-47-3
Cobalt	0.0081	mg/l	7440-48-4
Fluoride	0.352	mg/l	15984-48-8
Lead	0.0179	mg/l	7439-92-1
Lithium	0.0455	mg/l	7439-93-2
Mercury	0.00020	mg/l	7439-97-6
Molybdenum	0.0222	mg/l	7439-98-7
Radium 226	1.671	pci/l	13982-63-3
Radium 228	2.243	pci/l	15262-20-1
Radium 226/228	3.914	pci/l	EDF-206
Selenium	0.034	mg/l	7782-49-2
Thallium	0.0102	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)

Table 6

2022 Groundwater Protection Standards

Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	EPA Maximum Contaminate Level (MCL)	Groundwater Protection Standard (GPS)	Units	CAS #
Antimony	0.0020	0.006	0.006	mg/l	7440-36-0
Arsenic	0.0259	0.010	0.0259	mg/l	7440-38-2
Barium	0.6	2	2	mg/l	7440-39-3
Beryllium	0.0010	0.004	0.004	mg/l	7440-41-7
Cadmium	0.0502	0.005	0.0502	mg/l	7440-43-9
Chromium	0.0050	0.1	0.1	mg/l	7440-47-3
Cobalt	0.0081	0.006	0.0081	mg/l	7440-48-4
Fluoride	0.352	4	4	mg/l	15984-48-8
Lead	0.0179	0.015	0.0179	mg/l	7439-92-1
Lithium	0.0455	0.04	0.0455	mg/l	7439-93-2
Mercury	0.00020	0.002	0.002	mg/l	7439-97-6
Molybdenum	0.0222	0.1	0.1	mg/l	7439-98-7
Radium 226	1.671	--	--	pci/l	13982-63-3
Radium 228	2.243	--	--	pci/l	15262-20-1
Radium 226/228	3.914	5	5	pci/l	EDF-206
Selenium	0.034	0.05	0.05	mg/l	7782-49-2
Thallium	0.0102	0.002	0.0102	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)

2022 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 7

**Groundwater Analytical Data vs.
Groundwater Protection Standards**

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-1	03-21-2022	Antimony	0.0022	0.006	mg/l	7440-36-0
MW-1	07-18-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-1	03-21-2022	Arsenic	0.0022	0.0259	mg/l	7440-38-2
MW-1	07-18-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1	03-21-2022	Barium	0.14	2	mg/l	7440-39-3
MW-1	07-18-2022	Barium	0.15	2	mg/l	7440-39-3
MW-1	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-1	03-21-2022	Cadmium	0.00099	0.0502	mg/l	7440-43-9
MW-1	07-18-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-1	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-1	03-21-2022	Cobalt	0.00099	0.0081	mg/l	7440-48-4
MW-1	07-18-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-1	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-1	07-18-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-1	03-21-2022	Lead	0.0018	0.0179	mg/l	7439-92-1
MW-1	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1	03-21-2022	Lithium	**0.087**	0.0455	mg/l	7439-93-2
MW-1	07-18-2022	Lithium	**0.046**	0.0455	mg/l	7439-93-2
MW-1	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-1	03-21-2022	Molybdenum	0.0020	0.1	mg/l	7439-98-7
MW-1	07-18-2022	Molybdenum	< 0.0020	0.1	mg/l	7439-98-7
MW-1	03-21-2022	Radium 226	< 0.279	--	pci/l	13982-63-3
MW-1	07-18-2022	Radium 226	< 0.175	--	pci/l	13982-63-3
MW-1	03-21-2022	Radium 228	< 0.388	--	pci/l	15262-20-1
MW-1	07-18-2022	Radium 228	< 1.08	--	pci/l	15262-20-1
MW-1	03-21-2022	Radium-226/228	< 0.388	5	pci/l	425
MW-1	07-18-2022	Radium-226/228	< 1.08	5	pci/l	425
MW-1	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-1	07-18-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-1	03-21-2022	Thallium	0.0032	0.0102	mg/l	7440-28-0
MW-1	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-1RD	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-1RD	07-18-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-1RD	03-21-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1RD	07-18-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-1RD	03-21-2022	Barium	0.15	2	mg/l	7440-39-3
MW-1RD	07-18-2022	Barium	0.14	2	mg/l	7440-39-3
MW-1RD	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-1RD	03-21-2022	Cadmium	0.00044	0.0502	mg/l	7440-43-9
MW-1RD	07-18-2022	Cadmium	0.00013	0.0502	mg/l	7440-43-9
MW-1RD	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-1RD	03-21-2022	Cobalt	0.0011	0.0081	mg/l	7440-48-4
MW-1RD	07-18-2022	Cobalt	0.00073	0.0081	mg/l	7440-48-4
MW-1RD	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-1RD	07-18-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-1RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1RD	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-1RD	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-1RD	07-18-2022	Lithium	0.014	0.0455	mg/l	7439-93-2
MW-1RD	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-1RD	03-21-2022	Molybdenum	0.0032	0.1	mg/l	7439-98-7
MW-1RD	07-18-2022	Molybdenum	0.0029	0.1	mg/l	7439-98-7

Table 7

**Groundwater Analytical Data vs.
Groundwater Protection Standards**

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-1RD	03-21-2022	Radium 226	0.389	--	pci/l	13982-63-3
MW-1RD	07-18-2022	Radium 226	0.331	--	pci/l	13982-63-3
MW-1RD	03-21-2022	Radium 228	0.693	--	pci/l	15262-20-1
MW-1RD	07-18-2022	Radium 228	0.736	--	pci/l	15262-20-1
MW-1RD	03-21-2022	Radium-226/228	1.08	5	pci/l	425
MW-1RD	07-18-2022	Radium-226/228	1.07	5	pci/l	425
MW-1RD	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-1RD	07-18-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-1RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-1RD	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2R	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-2R	07-18-2022	Antimony	**0.20**	0.006	mg/l	7440-36-0
MW-2R	03-21-2022	Arsenic	< 0.0020	0.0259	mg/l	7440-38-2
MW-2R	07-18-2022	Arsenic	**0.19**	0.0259	mg/l	7440-38-2
MW-2R	03-21-2022	Barium	0.27	2	mg/l	7440-39-3
MW-2R	07-18-2022	Barium	0.24	2	mg/l	7440-39-3
MW-2R	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-2R	03-21-2022	Cadmium	0.00013	0.0502	mg/l	7440-43-9
MW-2R	07-18-2022	Cadmium	**0.093**	0.0502	mg/l	7440-43-9
MW-2R	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-2R	03-21-2022	Cobalt	0.0020	0.0081	mg/l	7440-48-4
MW-2R	07-18-2022	Cobalt	**0.087**	0.0081	mg/l	7440-48-4
MW-2R	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-2R	07-18-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-2R	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2R	07-18-2022	Lead	**0.19**	0.0179	mg/l	7439-92-1
MW-2R	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-2R	07-18-2022	Lithium	**0.19**	0.0455	mg/l	7439-93-2
MW-2R	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-2R	03-21-2022	Molybdenum	0.0022	0.1	mg/l	7439-98-7
MW-2R	07-18-2022	Molybdenum	**0.19**	0.1	mg/l	7439-98-7
MW-2R	03-21-2022	Radium 226	< 0.502	--	pci/l	13982-63-3
MW-2R	07-18-2022	Radium 226	0.327	--	pci/l	13982-63-3
MW-2R	03-21-2022	Radium 228	0.564	--	pci/l	15262-20-1
MW-2R	07-18-2022	Radium 228	< 0.675	--	pci/l	15262-20-1
MW-2R	03-21-2022	Radium-226/228	0.918	5	pci/l	425
MW-2R	07-18-2022	Radium-226/228	0.977	5	pci/l	425
MW-2R	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-2R	07-18-2022	Selenium	**0.36**	0.05	mg/l	7782-49-2
MW-2R	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2R	07-18-2022	Thallium	**0.18**	0.0102	mg/l	7440-28-0
MW-2RD	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-2RD	07-18-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-2RD	03-21-2022	Arsenic	0.0025	0.0259	mg/l	7440-38-2
MW-2RD	07-18-2022	Arsenic	0.0037	0.0259	mg/l	7440-38-2
MW-2RD	03-21-2022	Barium	0.20	2	mg/l	7440-39-3
MW-2RD	07-18-2022	Barium	0.16	2	mg/l	7440-39-3
MW-2RD	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-2RD	03-21-2022	Cadmium	0.00048	0.0502	mg/l	7440-43-9
MW-2RD	07-18-2022	Cadmium	0.00015	0.0502	mg/l	7440-43-9
MW-2RD	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-2RD	03-21-2022	Cobalt	0.0030	0.0081	mg/l	7440-48-4

Table 7

**Groundwater Analytical Data vs.
Groundwater Protection Standards**

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-2RD	07-18-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-2RD	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-2RD	07-18-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-2RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2RD	07-18-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-2RD	03-21-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-2RD	07-18-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-2RD	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-2RD	03-21-2022	Molybdenum	0.0026	0.1	mg/l	7439-98-7
MW-2RD	07-18-2022	Molybdenum	0.0038	0.1	mg/l	7439-98-7
MW-2RD	03-21-2022	Radium 226	0.868	--	pci/l	13982-63-3
MW-2RD	07-18-2022	Radium 226	0.525	--	pci/l	13982-63-3
MW-2RD	03-21-2022	Radium 228	< 0.934	--	pci/l	15262-20-1
MW-2RD	07-18-2022	Radium 228	0.631	--	pci/l	15262-20-1
MW-2RD	03-21-2022	Radium-226/228	1.74	5	pci/l	425
MW-2RD	07-18-2022	Radium-226/228	1.16	5	pci/l	425
MW-2RD	03-21-2022	Selenium	0.024	0.05	mg/l	7782-49-2
MW-2RD	07-18-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-2RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-2RD	07-18-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-3	07-19-2022	Antimony	**0.21**	0.006	mg/l	7440-36-0
MW-3	03-21-2022	Arsenic	0.0063	0.0259	mg/l	7440-38-2
MW-3	07-19-2022	Arsenic	**0.20**	0.0259	mg/l	7440-38-2
MW-3	03-21-2022	Barium	0.34	2	mg/l	7440-39-3
MW-3	07-19-2022	Barium	0.33	2	mg/l	7440-39-3
MW-3	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-3	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3	07-19-2022	Cadmium	**0.099**	0.0502	mg/l	7440-43-9
MW-3	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-3	03-21-2022	Cobalt	**0.0087**	0.0081	mg/l	7440-48-4
MW-3	07-19-2022	Cobalt	**0.093**	0.0081	mg/l	7440-48-4
MW-3	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3	07-19-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3	07-19-2022	Lead	**0.20**	0.0179	mg/l	7439-92-1
MW-3	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-3	07-19-2022	Lithium	**0.20**	0.0455	mg/l	7439-93-2
MW-3	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-3	03-21-2022	Molybdenum	0.0058	0.1	mg/l	7439-98-7
MW-3	07-19-2022	Molybdenum	**0.21**	0.1	mg/l	7439-98-7
MW-3	03-21-2022	Radium 226	0.464	--	pci/l	13982-63-3
MW-3	07-19-2022	Radium 226	0.554	--	pci/l	13982-63-3
MW-3	03-21-2022	Radium 228	< 0.522	--	pci/l	15262-20-1
MW-3	07-19-2022	Radium 228	1.46	--	pci/l	15262-20-1
MW-3	03-21-2022	Radium-226/228	0.938	5	pci/l	425
MW-3	07-19-2022	Radium-226/228	2.02	5	pci/l	425
MW-3	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-3	07-19-2022	Selenium	**0.39**	0.05	mg/l	7782-49-2
MW-3	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3	07-19-2022	Thallium	**0.20**	0.0102	mg/l	7440-28-0
MW-3R	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0

Table 7

**Groundwater Analytical Data vs.
Groundwater Protection Standards**

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-3R	07-19-2022	Antimony	**0.018**	0.006	mg/l	7440-36-0
MW-3R	03-21-2022	Arsenic	0.0026	0.0259	mg/l	7440-38-2
MW-3R	07-19-2022	Arsenic	0.019	0.0259	mg/l	7440-38-2
MW-3R	03-21-2022	Barium	0.63	2	mg/l	7440-39-3
MW-3R	07-19-2022	Barium	0.57	2	mg/l	7440-39-3
MW-3R	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-3R	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3R	07-19-2022	Cadmium	0.0087	0.0502	mg/l	7440-43-9
MW-3R	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-3R	03-21-2022	Cobalt	0.00053	0.0081	mg/l	7440-48-4
MW-3R	07-19-2022	Cobalt	0.0081	0.0081	mg/l	7440-48-4
MW-3R	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3R	07-19-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3R	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3R	07-19-2022	Lead	0.017	0.0179	mg/l	7439-92-1
MW-3R	03-21-2022	Lithium	0.019	0.0455	mg/l	7439-93-2
MW-3R	07-19-2022	Lithium	0.019	0.0455	mg/l	7439-93-2
MW-3R	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-3R	03-21-2022	Molybdenum	< 0.0020	0.1	mg/l	7439-98-7
MW-3R	07-19-2022	Molybdenum	0.021	0.1	mg/l	7439-98-7
MW-3R	03-21-2022	Radium 226	0.588	--	pci/l	13982-63-3
MW-3R	07-19-2022	Radium 226	0.723	--	pci/l	13982-63-3
MW-3R	03-21-2022	Radium 228	< 0.485	--	pci/l	15262-20-1
MW-3R	07-19-2022	Radium 228	1.17	--	pci/l	15262-20-1
MW-3R	03-21-2022	Radium-226/228	0.990	5	pci/l	425
MW-3R	07-19-2022	Radium-226/228	1.90	5	pci/l	425
MW-3R	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-3R	07-19-2022	Selenium	0.034	0.05	mg/l	7782-49-2
MW-3R	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3R	07-19-2022	Thallium	**0.023**	0.0102	mg/l	7440-28-0
MW-3RD	03-21-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-3RD	07-19-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-3RD	03-21-2022	Arsenic	0.0038	0.0259	mg/l	7440-38-2
MW-3RD	07-19-2022	Arsenic	0.0035	0.0259	mg/l	7440-38-2
MW-3RD	03-21-2022	Barium	0.21	2	mg/l	7440-39-3
MW-3RD	07-19-2022	Barium	0.18	2	mg/l	7440-39-3
MW-3RD	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-3RD	03-21-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3RD	07-19-2022	Cadmium	< 0.00010	0.0502	mg/l	7440-43-9
MW-3RD	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-3RD	03-21-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-3RD	07-19-2022	Cobalt	< 0.00050	0.0081	mg/l	7440-48-4
MW-3RD	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3RD	07-19-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-3RD	03-21-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3RD	07-19-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-3RD	03-21-2022	Lithium	0.012	0.0455	mg/l	7439-93-2
MW-3RD	07-19-2022	Lithium	0.011	0.0455	mg/l	7439-93-2
MW-3RD	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-3RD	03-21-2022	Molybdenum	0.0036	0.1	mg/l	7439-98-7
MW-3RD	07-19-2022	Molybdenum	0.0037	0.1	mg/l	7439-98-7
MW-3RD	03-21-2022	Radium 226	0.538	--	pci/l	13982-63-3

Table 7

**Groundwater Analytical Data vs.
Groundwater Protection Standards**

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-3RD	07-19-2022	Radium 226	0.671	--	pci/l	13982-63-3
MW-3RD	03-21-2022	Radium 228	0.403	--	pci/l	15262-20-1
MW-3RD	07-19-2022	Radium 228	1.19	--	pci/l	15262-20-1
MW-3RD	03-21-2022	Radium-226/228	0.941	5	pci/l	425
MW-3RD	07-19-2022	Radium-226/228	1.86	5	pci/l	425
MW-3RD	03-21-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-3RD	07-19-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-3RD	03-21-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-3RD	07-19-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0
MW-4	03-21-2022	Antimony	0.0032	0.006	mg/l	7440-36-0
MW-4	07-19-2022	Antimony	< 0.0020	0.006	mg/l	7440-36-0
MW-4	03-21-2022	Arsenic	0.0035	0.0259	mg/l	7440-38-2
MW-4	07-19-2022	Arsenic	0.0022	0.0259	mg/l	7440-38-2
MW-4	03-21-2022	Barium	0.23	2	mg/l	7440-39-3
MW-4	07-19-2022	Barium	0.24	2	mg/l	7440-39-3
MW-4	03-21-2022	Beryllium	< 0.0010	0.004	mg/l	7440-41-7
MW-4	03-21-2022	Cadmium	0.0013	0.0502	mg/l	7440-43-9
MW-4	07-19-2022	Cadmium	0.00015	0.0502	mg/l	7440-43-9
MW-4	03-21-2022	Chromium	< 0.0050	0.1	mg/l	7440-47-3
MW-4	03-21-2022	Cobalt	0.0013	0.0081	mg/l	7440-48-4
MW-4	07-19-2022	Cobalt	0.00077	0.0081	mg/l	7440-48-4
MW-4	03-21-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-4	07-19-2022	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-4	03-21-2022	Lead	0.0019	0.0179	mg/l	7439-92-1
MW-4	07-19-2022	Lead	< 0.00050	0.0179	mg/l	7439-92-1
MW-4	03-21-2022	Lithium	< 0.010	0.0455	mg/l	7439-93-2
MW-4	07-19-2022	Lithium	0.017	0.0455	mg/l	7439-93-2
MW-4	03-21-2022	Mercury	< 0.00020	0.002	mg/l	7439-97-6
MW-4	03-21-2022	Molybdenum	0.0038	0.1	mg/l	7439-98-7
MW-4	07-19-2022	Molybdenum	< 0.0020	0.1	mg/l	7439-98-7
MW-4	03-21-2022	Radium 226	< 0.325	--	pci/l	13982-63-3
MW-4	07-19-2022	Radium 226	0.284	--	pci/l	13982-63-3
MW-4	03-21-2022	Radium 228	0.371	--	pci/l	15262-20-1
MW-4	07-19-2022	Radium 228	0.497	--	pci/l	15262-20-1
MW-4	03-21-2022	Radium-226/228	0.531	5	pci/l	425
MW-4	07-19-2022	Radium-226/228	0.781	5	pci/l	425
MW-4	03-21-2022	Selenium	0.0052	0.05	mg/l	7782-49-2
MW-4	07-19-2022	Selenium	< 0.0050	0.05	mg/l	7782-49-2
MW-4	03-21-2022	Thallium	0.0034	0.0102	mg/l	7440-28-0
MW-4	07-19-2022	Thallium	< 0.0010	0.0102	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)
Bold = Indicates concentration above Groundwater Protection Standard

Appendix A – Field Data Sheets

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 1 13:10

Initial Water Level (feet): 6.38 ~~7.3~~

Ground Water Elevation (ft, msl): 1237.54

Top of Casing (ft, msl) 1244.84

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-1

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N.Schlegel

Casing Length (ft) 25.6

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 3.1 ~~3.1~~

Total Volume Purged (gal): 9.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 6.72'

Date/Time Completed: 3/21/22 13:40

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
13:10	1000	0.1	11.94	6.85	904	0.0	0.00	27
13:20	1000	3.0	12.04	6.93	941	0.0	0.00	42
13:30	1000	6.0	12.09	7.15	978	0.0	0.00	69
13:35	1000	9.5	11.36	6.86	1,130	0.0	0.00	96

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-1

Water Lever @ Sampling (ft): 7.62'

Well Collection Sequence 5 of 12

Parameters: Annual _____ Semiannual: _____

Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 13:46	VOCs: 100 Other: 100	11.21	6.92	1,150	0.0	0.00	99

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 65°F, mostly cloudy, S-10mph S

Sampling Characteristics: ~~mud~~ clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle)

# of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 664911

Date: 3/21/22 By: M. Sullaged Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-1RD

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Sunlof

Casing Length (ft) 75.5

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/21/22 13:10

Initial Water Level (feet): 28.39 ~~28.61~~

Ground Water Elevation (ft, msl): ~~1216~~.91

Top of Casing (ft, msl) 1245.52

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 7.7 ~~7.9~~

Total Volume Purged (gal): 25.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 28.42'

Date/Time Completed: 3/21/22 14:05

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
13:10	1000	0.1	12.37	6.97	549	0.0	2.42	155
13:30	1000	10.0	10.00	7.27	605	0.0	1.47	-37
13:50	1000	20.0	9.88	7.22	591	0.0	0.00	-51
14:00	1000	25.0	9.89	7.22	591	0.0	0.00	-51

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1RD

Water Lever @ Sampling (ft): 28.42' Well Collection Sequence 6 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: 1 Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/24/22 1428	VOCs: 100 Other: 100	9.86	7.23	591	0.0	0.00	-52

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 64°F, mostly clear, 10-15 mph southwest

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785087

Date: 3/24/22 By: M. Schlagel Title: Staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated:

Initial Water Level (feet): 8.86 ~~10.2~~

Ground Water Elevation (ft, msl): ~~1216.03~~

Top of Casing (ft, msl) 1226.23

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-2R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M. Schlapp

Casing Length (ft) 18.35

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.5 ~~201.2~~

Total Volume Purged (gal): 1.5 slow recharge

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 16.87'

Date/Time Completed: 3/24/22 14:55

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
14:35	1000	0.1	8.40	7.37	1,700	18.6	4.04	-49
14:40	1000	0.5	8.48	7.39	1,680	12.6	2.96	-46
14:45	1000	1.0	8.22	7.43	1,670	6.1	3.02	-42
14:50	1000	1.5	~~8.09~~	7.45	1,660	2.2	3.11	-38

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-2R

Water Lever @ Sampling (ft): 16.87'

Well Collection Sequence 7 of 12

Parameters: Annual _____ Semiannual: _____

Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 14:55	VOCs: 100 Other: 100	7.94	7.49	1,660	0.0	3.08	-33

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 65°F, mostly cloudy, 10-15 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle)

# of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785081

Date: 3/21/22 By: N. Schlagel Title: Staff environ. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/21/22 14:35

Initial Water Level (feet): 10.12 ~~10.32~~

Ground Water Elevation (ft, msl): ~~1216.05~~

Top of Casing (ft, msl) 1226.37

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-2RD

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 35

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 4.1 ~~198.4~~

Total Volume Purged (gal): 12.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 10.15

Date/Time Completed: 3/21/22 15:10

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
14:35	1000	0.1	10.31	8.19	980	0.0	3.39	24
14:45	1000	4.0	10.85	8.01	990	0.0	2.40	36
14:55	1000	8.0	11.47	7.40	1,010	0.0	0.00	31
15:05	1000	12.5	11.47	7.40	1,000	0.0	0.00	31

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-2RD

Water Lever @ Sampling (ft): 10.15'

Well Collection Sequence 7 of 12

Parameters: Annual _____ Semiannual: _____

Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 15:10	VOCs: 100 Other: 1000	11.47	7.39	1,010	0.0	0.100	30

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 66°F, mostly cloudy, 10-15 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785083

Date: 3/21/22 By: D. Schlegel Title: Staff Env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/21/22 16:00

Initial Water Level (feet): 8.22 ~~9.35~~

Ground Water Elevation (ft, msl): 1215.84

Top of Casing (ft, msl) 1225.19

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-3R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Eckhardt

Casing Length (ft) 27.5

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 3.14 ~~199.6~~

Total Volume Purged (gal): 9.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 8.20

Date/Time Completed: 3/21/22 16:20

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
16:00	1000	0.1	10.57	6.65	1,380	232	2.16	-70
16:05	1000	3.0	9.97	6.86	1,370	32.7	0.96	-95
16:10	1010	6.0	9.90	7.16	1,410	0.0	4.02	-105
16:15	1000	9.5	9.89	7.10	1,390	0.0	3.28	-109

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3R

Water Lever @ Sampling (ft): 9.26 Well Collection Sequence 10 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 16:20	VOCs: 100 Other: 1000	9.81	7.14	1,400	0.0	3.91	-109

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 69°F, mostly cloudy 10-15 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: ~~8~~ 9

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 785032

Date: 3/21/22 By: NSchlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/2/22 16:00

Initial Water Level (feet): 9.18' ~~9.3~~

Ground Water Elevation (ft, msl): ~~1213.85~~

Top of Casing (ft, msl) 1223.15

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-3

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M. Schlegel

Casing Length (ft) 19.7

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.80 ~~1.7~~

Total Volume Purged (gal): 5.0 slow recharge

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.87'

Date/Time Completed: 3/2/22 16:35

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
16:00	~~7~~1000	0.1	8.74	7.98	1,480	0.0	11.06	-58
16:10	1000	2.0	8.78	7.70	1,480	0.0	5.25	-57
16:20	1000	4.0	8.87	8.02	1,470	0.0	6.14	-58
16:30	1000	5.0	8.60	8.09	1,480	0.0	5.87	-56

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3

Water Lever @ Sampling (ft): 9.87' Well Collection Sequence 10 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 16:35	VOCs: 100 Other: 1000	8.66	8.20	1,480	0.0	5.07	-57

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 68°F, mostly cloudy, 5-10 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 9

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 664913

Date: 3/21/22 By: N Schlicht Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/21/22 16:50

Initial Water Level (feet): 9.34 ~~9.47~~

Ground Water Elevation (ft, msl): 1215.54

Top of Casing (ft, msl) 1225.01

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-3RD

Duplicate Collected: Yes - DUP2

Field Blank Collected: Yes - FB2

Equipment Blank Collected: NO

MS/MSD Collected: Yes

Sampler(s): N. Sundell

Casing Length (ft) 46.25

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 6.0 ~~6.2~~

Total Volume Purged (gal): 18.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.38'

Date/Time Completed: 3/21/22 17:25

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
16:50	1000	0.1	9.55	8.99	20	124	9.51	-67
17:00	1000	6.0	9.56	8.13	14	129	9.52	-65
17:10	1000	12.0	9.52	7.42	9	124	9.89	-59
17:20	1000	18.0	9.50	7.25	11	131	9.84	-57

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3RD

Water Lever @ Sampling (ft): 9.38' Well Collection Sequence 11 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 1225	VOCs: 100 Other: 1000	9.50	7.23	11	137	8.75	-58

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 68°F, mostly cloudy, 5-10mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 9

Well Closed and Locked: Yes No (circle

Notes:

Minnesota Unique Well ID: 785094

Date: 3/21/22 By: N-Schlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 3/21/22 18:35

Initial Water Level (feet): 6.47' ~~8.63~~

Ground Water Elevation (ft, msl): ~~1217.34~~

Top of Casing (ft, msl) 1225.97

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-4

Duplicate Collected: ~~Yes~~ No

Field Blank Collected: No

Equipment Blank Collected: Yes

MS/MSD Collected: No

Sampler(s): M. Schlegel

Casing Length (ft) 18.3

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.93 ~~1.6~~

Total Volume Purged (gal): 6.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 6.92'

Date/Time Completed: 3/21/22 18:55

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
18:35	1000	0.1	12.75	9.08	551	0.0	6.27	69
18:40	1000	2.0	10.72	7.50	1,210	0.0	0.00	98
18:45	1000	4.0	9.71	7.56	1,230	0.0	0.00	101
18:50	1000	6.0	9.11	6.98	1,240	0.0	0.00	103

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-4

Water Lever @ Sampling (ft): 6.42'

Well Collection Sequence 12 of 12

Parameters: Annual _____ Semiannual: _____

Quarterly: 4 Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
3/21/22 16:55	VOCs: 100 Other: 1000	9.03	6.93	1,250	0.0	0.00	104

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 64°F, cloudy, 0-5 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: _____

Date: 3/21/22 By: M. Schlagel Title: staff envir. scientist

Company: Groundwater and Environmental Services, Inc.

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time) 3/21/22 7:30

End of day: (Date/Time) 3/21/22 20:00

YSI Model Number U-5000

YSI Serial Number 9IUX6E4R5

Sonde Model Number U-52

Sonde Serial Number UBELR5HL

Sampling Event

Time:	Value:		
7:30	-	NTU std =	DI Water
	100	NTU std =	100
	1409	uS std =	1409
	4.00	pH std =	4
	7.00	pH std =	7
	10.00	pH std =	10

Calibration Notes:

Groundwater Elevation Measurements
SKB Landfill (Lansing)

Site: Lansing
Personnel: N. Schlegel

Well ID	Date	Time	Depth To Water:	Notes:
MW-101A	3/21/22	8:14	11.63'	
MW-102A		8:16	5.98'	
MW-103A		8:11	8.65'	
MW-104A		8:06	7.91'	
MW-105A		8:19	10.69'	tab on collar of pvc top broken, no lock
MW-106A		8:30	8.94'	
MW-107A		8:27	6.30'	
MW-108A		8:25	9.88'	rusty lock, not operable, needs to be replaced
MW-1A		9:28	12.21'	
MW-2A		10:30	6.26'	rusty lock, not operable, needs to be replaced
MW-3A		8:40	12.57'	
MW-4RA		9:55	25.13'	
MW-1		13:08	6.38	
MW-1D		13:10	28.29'	
MW-2R		14:33	8.86'	
MW-2RD		14:35	10.12'	
MW-3		15:58	8.18'	
MW-3R		16:00	8.22'	
MW-3RD		16:50	9.34'	
MW-4		18:35	6.47'	rusty lock, not operational, needs to be replaced
PIEZ-4		11:59	10.19'	
MW-5S		12:08	28.71'	
MW-5D		12:10	28.87'	
PIEZ-3		12:12	6.52'	
PIEZ-1		12:16	8.54'	~~rusty lock, not operational, needs to be replaced~~
PIEZ-2		12:23	19.53'	Rusty lock, not operational, needs to be replaced
MW-6S		12:30	5.35	" " " " " " "
MW-8S		12:34	17.45	" " " " " " "
MW-8D		12:36	17.11	
MW-7S		12:39	18.08'	rusty lock, not operational, needs to be replaced
MW-7D		12:41	17.89'	" " " " " " "
PIEZ-5		12:45	4.95'	
P-11		12:02	24.92'	
P-10		12:04	20.82'	

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/18/22 12:55

Initial Water Level (feet): 6.90' ~~7.3~~

Ground Water Elevation (ft, msl): 1237.54

Top of Casing (ft, msl) 1244.84

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-1

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 25.6

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 3.05 ~~3.1~~

Total Volume Purged (gal): 9.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 7.27'

Date/Time Completed: 7/18/22 13:30

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
12:55	1000	0.1	14.64	7.16	1,270	24.0	11.74	111
13:05	1000	3.0	12.71	7.23	1,240	21.0	5.17	120
13:15	1000	6.0	12.63	7.22	1,260	17.1	4.08	119
13:25	1000	9.5	12.50	7.10	1,270	18.1	0.63	120

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1

Water Lever @ Sampling (ft): 7.27' Well Collection Sequence of

Parameters: Annual X Semiannual: Quarterly: Monthly: 5 Other: 12

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
13:30 7/18/22	VOCs: 100 Other: 1000	12.50	7.18	1,270	17.9	0.61	121

YSI Serial Number:

YSI Sonde Serial Number:

GENERAL INFORMATION:

Weather Conditions @ sampling: 88°F, sunny, 5-10 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9

Well Closed and Locked: (Yes) No (circle

Notes:

Minnesota Unique Well ID: 664911

Date: 7/18/22 By: A. Schlagel Title: staff environ. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/18/22 13:45

Initial Water Level (feet): ~~28.61~~ 27.83'

Ground Water Elevation (ft, msl): ~~1216.91~~

Top of Casing (ft, msl) 1245.52

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-1RD

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlager

Casing Length (ft) 75.5

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 7.78 ~~7.9~~

Total Volume Purged (gal): 23.5'

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 27.58'

Date/Time Completed: 7/18/22 14:15

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
13:45	1000	0.1	10.70	7.66	596	34.4	1.82	4
13:58	1000	10.0	10.03	7.54	68	21.2	0.00	-76
14:08	1000	20.0	9.74	7.[illegible]3	613	22.4	0.00	-68
14:10	1000	23.5	9.72	7.60	614	19.4	0.00	-66

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1RD

Water Lever @ Sampling (ft): 27.58 Well Collection Sequence 6 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7/8/22 14:15	VOCs: 100 Other: 1000	9.69	7.44	614	19.2	0.00	-62

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 88°F sunny 5-10 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9/5

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: _____

Date: 7/8/22 By: M Schlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/18/22

Initial Water Level (feet): ~~10.32~~ 9.55'

Ground Water Elevation (ft, msl): ~~1216.05~~

Top of Casing (ft, msl) 1226.37

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-2RD

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 35

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 4.15 ~~198.4~~

Total Volume Purged (gal): 12.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.75'

Date/Time Completed: 7/18/22 15:35

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
15:00	1000	0.1	11.94	7.28	899	44.7	5.40	-24
15:10	1000	4.0	10.29	7.34	858	62.4	2.00	9
15:20	1000	8.0	10.23	7.25	987	39.0	0.00	9
15:30	1000	12.5	10.14	7.27	4000	34.8	0.00	2

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-2RD

Water Lever @ Sampling (ft): 9.75 Well Collection Sequence 7 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
15:35 7/18/22	VOCs: 100 Other: 1000	10.19	7.27	1,000	34.8	0.00	2

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 89F, sunny 5-10 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 9/5

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 785083

Date: 7/18/22 By: M Schlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-2R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): [illegible]

Casing Length (ft) 18.35

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/18/22 14:45

Initial Water Level (feet): ~~10.2~~ 9.60'

Ground Water Elevation (ft, msl): ~~1216.03~~

Top of Casing (ft, msl) 1226.23

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.4 ~~201.2~~

Total Volume Purged (gal): 1.5 slow recharge

Purged Dry?: Yes **(No)** (circle)

Water Level After Purge (ft): 16.87'

Date/Time Completed: 7/19/22 15:40

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
14:45	1000	0.1	15.08	7.07	1,640	94.0	8.19	-68
14:50	1000	0.5	14.17	6.91	1,660	55.0	1.33	-49
14:55	1000	1.0	14.27	6.90	1,660	52.6	1.22	-48
15:00	1000	1.5	14.32	6.90	1,660	50.5	1.14	-47

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-2R

Water Lever @ Sampling (ft): 16.87 Well Collection Sequence 7 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7/19/22 1540	VOCs: 100 Other: 100	14.58	6.89	1,660	46.8	1.02	-44

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 88°F, sunny, 5-10 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 9/8

Well Closed and Locked: Yes No (circle)

Notes: ~~let well recharge overnight, collect samples on 7/19/22~~

Minnesota Unique Well ID:

Date: 7/19/22 By: K. Schlegel Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/19/22

Initial Water Level (feet): 9.34' ~~9.3~~

Ground Water Elevation (ft, msl): ~~1213.85~~

Top of Casing (ft, msl) 1223.15

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-3

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 19.7

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.69 ~~1.7~~

Total Volume Purged (gal): 5.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 10.20'

Date/Time Completed: 7/19/22 7:35

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
7:15	1000	0.1	13.55	9.39	1,400	886	5.23	-96
7:20	1000	2.0	10.96	8.44	1,380	97.0	0.00	-83
7:25	1000	4.0	10.32	7.99	1,460	40.9	0.00	-86
7:30	1000	5.5	10.12	7.71	1,470	40.0	0.00	-86

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3

Water Lever @ Sampling (ft): 10.28 Well Collection Sequence 9 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7:35 7/19/22	VOCs: 100 Other: 1000	10.52	7.70	1,470	40.2	0.00	-86

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 72°F, cloudy, 0-5 mph W

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 9/5

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 664913

Date: 7/19/22 By: N-Schlapel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/19/22

Initial Water Level (feet): 9.28' ~~9.35~~

Ground Water Elevation (ft, msl): ~~1215.84~~

Top of Casing (ft, msl) 1225.19

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: MW-3R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 27.5

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 2.97 ~~199.6~~

Total Volume Purged (gal): 9.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.51'

Date/Time Completed: 7/19/22 8:15

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
7:57	1000	0.1	10.40	7.85	1,370	237	14.65	-58
8:02	1000	3.0	9.36	7.41	1,400	62.2	0.00	-100
8:07	1000	6.0	9.35	7.27	1,430	29.3	0.23	-113
8:12	1000	9.0	9.26	7.19	1,440	24.0	0.00	-114

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3R

Water Lever @ Sampling (ft): 9.51' Well Collection Sequence 10 of 12

Parameters: Annual 1 Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
8:15 7/19/22	VOCs: 100 Other: 1000	9.26	7.18	1,440	25.9	0.00	-114

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 74°F, cloudy 5-10 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9/5

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785082

Date: 7/19/22 By: N-Schlegel Title: staff environmental scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/19/22 8:50

Initial Water Level (feet): 8.95 ~~9.47~~

Ground Water Elevation (ft, msl): ~~1215.54~~

Top of Casing (ft, msl) 1225.01

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-3RD

Duplicate Collected: Yes - Dup-2

Field Blank Collected: Yes

Equipment Blank Collected: ~~Yes~~ No

MS/MSD Collected: Yes

Sampler(s): N. Sinkgel

Casing Length (ft) 46.25

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 6.08 ~~6.2~~

Total Volume Purged (gal): 18.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 8.89'

Date/Time Completed: 7/19/22 9:25

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
8:50	1000	0.1	10.31	7.70	865	337	2.93	+100
9:00	1000	6.0	9.92	7.47	878	59.2	0.00	-72
9:10	1000	12.0	9.91	7.46	881	37.2	0.00	-75
9:20	1000	18.5	9.89	7.46	885	32.7	0.00	-78

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3RD

Water Lever @ Sampling (ft): 8.89' Well Collection Sequence 11 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7/19/22 9:25	VOCs: 100 Other: 1000	9.89	7.45	984	34.0	0.00	-77

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 74°F, cloudy, 10-15 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9/5

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785084

Date: 7/19/22 By: N Schlegel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 7/19/22 10:15

Initial Water Level (feet): 7.36 ~~8.63~~

Ground Water Elevation (ft, msl): ~~1217.34~~

Top of Casing (ft, msl) 1225.97

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: MW-4

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: Yes

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 18.3

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.78 ~~1.6~~

Total Volume Purged (gal): 5.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.48'

Date/Time Completed: 7/19/22 10:50

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:18	1000	0.1	13.57	7.47	1,280	25.7	5.62	26
10:25	1000	2.0	12.64	7.23	1,350	185	0.00	52
10:35	1000	4.0	13.27	7.20	1,350	18.5	0.00	59
10:45	1000	5.5	13.23	7.17	1,350	19.9	0.00	64

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-4

Water Lever @ Sampling (ft): 9.48'

Well Collection Sequence 12 of 12

Parameters: Annual X Semiannual: _____ Quarterly: _____ Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7/19/22 1650	VOCs: 100 Other: 1000	13.24	7.16	1,350	20.0	0.00	64

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 79°F, partly cloudy 10-15 mph S

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 9/6

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 664414

Date: 7/19/22 By: M. Schlagel Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time)	7/18/22 7:30
End of day: (Date/Time)	7/19/22 12:00
YSI Model Number	U-52
YSI Serial Number	-
Sonde Model Number	U-5000
Sonde Serial Number	102508

Sampling Event

Time:	Value:		
7:36	-	NTU std =	DI Water
	100	NTU std =	100
	1409	uS std =	1409
	4.00	pH std =	4
	7.00	pH std =	7
↓	10.00	pH std =	10

Calibration Notes:

Groundwater Elevation Measurements
SKB Landfill (Lansing)

Site: SKB Lansing
Personnel: MSchlagel

Well ID	Date	Time	Depth To Water:	Notes:
MW-101A	7/18/22	7:55	8.02'	
MW-102A		7:58	8.35'	
MW-103A		7:50	7.38'	
MW-104A		7:45	6.76'	
MW-105A		8:00	10.97'	
MW-106A		8:12	8.64'	
MW-107A		8:09	6.48'	
MW-108A		8:04	11.51'	
MW-1A		9:35	11.86'	
MW-2A		11:10	7.01'	
MW-3A		8:45	13.27'	
MW-4RA		10:20	23.15'	
MW-1		12:55	6.90'	
MW-1RD		13:05	27.83'	
MW-2R		14:40	9.60'	
MW-2RD		14:42	9.55'	
MW-3		16:15	9.34'	
MW-3R		16:17	9.28'	
MW-3RD		16:14	8.95'	
MW-4		16:22	7.36'	
PIEZ-4		16:28	8.48'	
MW-5S		16:30	27.67'	
MW-5D		16:32	28.01'	
PIEZ-3		16:35	5.86'	
PIEZ-1		16:39	10.48'	
PIEZ-2		16:41	17.17'	
MW-6S		16:44	3.38'	
MW-8S		16:48	15.75'	
MW-8D		16:50	15.45'	
MW-7S		16:52	16.86'	
MW-7D		16:54	16.69'	
PIEZ-5		16:56	4.72'	
P-11		14:40	23.35'	
P-10		12:40	18.95'	

Appendix B – Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-227425-1
Client Project/Site: SKB Lansing CCR Monitoring
Sampling Event: CCR Monitoring

For:
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Attn: Megan Lindstrom

Authorized for release by:
4/25/2022 1:18:07 PM

Zach Bindert, Project Manager I
(319)277-2401
Zach.Bindert@et.eurofinsus.com

Table of Contents

Job ID: 310-227425-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-227425-2

Comments
No additional comments.

Receipt
The samples were received on 3/23/2022 2:10 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 0.5º C, 0.8º C, 1.2º C and 1.3º C.

RAD
Methods 903.0, 9315: Radium-226 batch 557418
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW-1 - CCR (310-227425-1), MW-1RD - CCR (310-227425-2), MW-2R - CCR (310-227425-3), MW-3 - CCR (310-227425-4), MW-3R - CCR (310-227425-5), MW-3RD - CCR (310-227425-6), MW-3RD - CCR (310-227425-6[MS]), MW-3RD - CCR (310-227425-6[MSD]), MW-4 - CCR (310-227425-7), Field Blank 1 - CCR (310-227425-9), Duplicate 1 - CCR (310-227425-10), Equipment Blank - CCR (310-227425-11), (LCS 160-557418/1-A) and (MB 160-557418/22-A)

Method 9315: Radium-226 batch 557418

Due to a loss of sample during the prep process the following sample(s) have Barium carrier recoveries below the QC limit indicating a potential increase in the stated uncertainty. Radium 226 was not detected in the samples above the reporting limit; therefore, the results have been reported. Additionally the QC samples associated with the batch have acceptable carrier recovery indicating the potential presence of matrix interference.

MW-2RD - CCR (310-227425-8)

Methods 904.0, 9320: Radium 228 batch 557419
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW-1 - CCR (310-227425-1), MW-1RD - CCR (310-227425-2), MW-2R - CCR (310-227425-3), MW-3 - CCR (310-227425-4), MW-3R - CCR (310-227425-5), MW-3RD - CCR (310-227425-6), MW-3RD - CCR (310-227425-6[MS]), MW-3RD - CCR (310-227425-6[MSD]), MW-4 - CCR (310-227425-7), Field Blank 1 - CCR (310-227425-9), Duplicate 1 - CCR (310-227425-10), Equipment Blank - CCR (310-227425-11), (LCS 160-557419/1-A) and (MB 160-557419/22-A)

Method 9320: Radium-228 batch 557419
Due to a loss of sample during the prep process the following sample(s) have Barium carrier recoveries below the QC limit indicating a potential increase in the stated uncertainty. Radium 228 was not detected in the samples above the reporting limit; therefore, the results have been reported. Additionally the QC samples associated with the batch have acceptable carrier recovery indicating the potential presence of matrix interference.

MW-2RD - CCR (310-227425-8)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-227425-1	MW-1 - CCR	Water	03/21/22 13:40	03/23/22 14:10
310-227425-2	MW-1RD - CCR	Water	03/21/22 14:05	03/23/22 14:10
310-227425-3	MW-2R - CCR	Water	03/21/22 14:55	03/23/22 14:10
310-227425-4	MW-3 - CCR	Water	03/21/22 16:35	03/23/22 14:10
310-227425-5	MW-3R - CCR	Water	03/21/22 16:20	03/23/22 14:10
310-227425-6	MW-3RD - CCR	Water	03/21/22 17:25	03/23/22 14:10
310-227425-7	MW-4 - CCR	Water	03/21/22 18:55	03/23/22 14:10
310-227425-8	MW-2RD - CCR	Water	03/21/22 15:10	03/23/22 14:10
310-227425-9	Field Blank 1 - CCR	Water	03/21/22 18:10	03/23/22 14:10
310-227425-10	Duplicate 1 - CCR	Water	03/21/22 00:00	03/23/22 14:10
310-227425-11	Equipment Blank - CCR	Water	03/21/22 18:15	03/23/22 14:10

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-1 - CCR — Lab Sample ID: 310-227425-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	260		5.0		mg/L	5		9056A	Total/NA
Sulfate	71		5.0		mg/L	5		9056A	Total/NA
Antimony	0.0022		0.0020		mg/L	1		6020B	Total/NA
Arsenic	0.0022		0.0020		mg/L	1		6020B	Total/NA
Barium	0.14		0.0020		mg/L	1		6020B	Total/NA
Boron	0.25		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.00099		0.00010		mg/L	1		6020B	Total/NA
Calcium	169		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.00099		0.00050		mg/L	1		6020B	Total/NA
Lead	0.0018		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.087		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0020		0.0020		mg/L	1		6020B	Total/NA
Thallium	0.0032		0.0010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	672		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-1RD - CCR — Lab Sample ID: 310-227425-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24		5.0		mg/L	5		9056A	Total/NA
Sulfate	53		5.0		mg/L	5		9056A	Total/NA
Barium	0.15		0.0020		mg/L	1		6020B	Total/NA
Cadmium	0.00044		0.00010		mg/L	1		6020B	Total/NA
Calcium	77.0		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.0011		0.00050		mg/L	1		6020B	Total/NA
Molybdenum	0.0032		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	290		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2R - CCR — Lab Sample ID: 310-227425-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	100		5.0		mg/L	5		9056A	Total/NA
Sulfate	230		5.0		mg/L	5		9056A	Total/NA
Barium	0.27		0.0020		mg/L	1		6020B	Total/NA
Boron	3.9		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.00013		0.00010		mg/L	1		6020B	Total/NA
Calcium	227		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.0020		0.00050		mg/L	1		6020B	Total/NA
Molybdenum	0.0022		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	1160		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3 - CCR — Lab Sample ID: 310-227425-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	46		5.0		mg/L	5		9056A	Total/NA
Sulfate	22		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0063		0.0020		mg/L	1		6020B	Total/NA
Barium	0.34		0.0020		mg/L	1		6020B	Total/NA
Boron	0.60		0.10		mg/L	1		6020B	Total/NA
Calcium	229		0.50		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-3 - CCR (Continued)

Lab Sample ID: 310-227425-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.0087		0.00050		mg/L	1		6020B	Total/NA
Molybdenum	0.0058		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	928		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3R - CCR

Lab Sample ID: 310-227425-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22		5.0		mg/L	5		9056A	Total/NA
Sulfate	8.1		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0026		0.0020		mg/L	1		6020B	Total/NA
Barium	0.63		0.0020		mg/L	1		6020B	Total/NA
Calcium	233		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.00053		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.019		0.010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	790		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3RD - CCR

Lab Sample ID: 310-227425-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24		5.0		mg/L	5		9056A	Total/NA
Sulfate	75		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0038		0.0020		mg/L	1		6020B	Total/NA
Barium	0.21		0.0020		mg/L	1		6020B	Total/NA
Calcium	119		0.50		mg/L	1		6020B	Total/NA
Lithium	0.012		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0036		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	470		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-4 - CCR

Lab Sample ID: 310-227425-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27		5.0		mg/L	5		9056A	Total/NA
Sulfate	210		5.0		mg/L	5		9056A	Total/NA
Antimony	0.0032		0.0020		mg/L	1		6020B	Total/NA
Arsenic	0.0035		0.0020		mg/L	1		6020B	Total/NA
Barium	0.23		0.0020		mg/L	1		6020B	Total/NA
Boron	0.25		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.0013		0.00010		mg/L	1		6020B	Total/NA
Calcium	208		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.0013		0.00050		mg/L	1		6020B	Total/NA
Lead	0.0019		0.00050		mg/L	1		6020B	Total/NA
Molybdenum	0.0038		0.0020		mg/L	1		6020B	Total/NA
Selenium	0.0052		0.0050		mg/L	1		6020B	Total/NA
Thallium	0.0034		0.0010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	840		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-2RD - CCR — Lab Sample ID: 310-227425-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	42		5.0		mg/L	5		9056A	Total/NA
Sulfate	84		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0025		0.0020		mg/L	1		6020B	Total/NA
Barium	0.20		0.0020		mg/L	1		6020B	Total/NA
Boron	0.16		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.00048		0.00010		mg/L	1		6020B	Total/NA
Calcium	144		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.0030		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.012		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0026		0.0020		mg/L	1		6020B	Total/NA
Selenium	0.024		0.0050		mg/L	1		6020B	Total/NA
Total Dissolved Solids	554		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank 1 - CCR — Lab Sample ID: 310-227425-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	1.3		0.50		mg/L	1		6020B	Total/NA
pH	5.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Duplicate 1 - CCR — Lab Sample ID: 310-227425-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	28		5.0		mg/L	5		9056A	Total/NA
Sulfate	87		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0037		0.0020		mg/L	1		6020B	Total/NA
Barium	0.20		0.0020		mg/L	1		6020B	Total/NA
Calcium	118		0.50		mg/L	1		6020B	Total/NA
Lithium	0.012		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0035		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	456		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank - CCR — Lab Sample ID: 310-227425-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	1.0		0.50		mg/L	1		6020B	Total/NA
pH	6.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1 - CCR

Date Collected: 03/21/22 13:40
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	260		5.0		mg/L			03/28/22 09:56	5
Fluoride	<0.50		0.50		mg/L			03/28/22 09:56	5
Sulfate	71		5.0		mg/L			03/28/22 09:56	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0022		0.0020		mg/L		03/29/22 09:00	04/05/22 21:52	1
Arsenic	0.0022		0.0020		mg/L		03/29/22 09:00	04/05/22 21:52	1
Barium	0.14		0.0020		mg/L		03/29/22 09:00	04/05/22 21:52	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 21:52	1
Boron	0.25		0.10		mg/L		03/29/22 09:00	04/05/22 21:52	1
Cadmium	0.00099		0.00010		mg/L		03/29/22 09:00	04/05/22 21:52	1
Calcium	169		0.50		mg/L		03/29/22 09:00	04/05/22 21:52	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 21:52	1
Cobalt	0.00099		0.00050		mg/L		03/29/22 09:00	04/05/22 21:52	1
Lead	0.0018		0.00050		mg/L		03/29/22 09:00	04/05/22 21:52	1
Lithium	0.087		0.010		mg/L		03/29/22 09:00	04/05/22 21:52	1
Molybdenum	0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 21:52	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 21:52	1
Thallium	0.0032		0.0010		mg/L		03/29/22 09:00	04/05/22 21:52	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:09	04/04/22 13:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	672		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			03/23/22 14:55	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.279	U	0.164	0.165	1.00	0.279	pCi/L	03/28/22 09:50	04/22/22 07:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*98.5*		*40 - 110*	*03/28/22 09:50*	*04/22/22 07:42*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.388	U	0.241	0.242	1.00	0.388	pCi/L	03/28/22 10:39	04/21/22 13:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*98.5*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*
Y Carrier	*89.0*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-1 - CCR
Date Collected: 03/21/22 13:40
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-1
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<0.388	U	0.292	0.293	5.00	0.388	pCi/L		04/22/22 16:11	1

Client Sample ID: MW-1RD - CCR

Date Collected: 03/21/22 14:05
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24**		5.0		mg/L			03/28/22 10:12	5
Fluoride	<0.50		0.50		mg/L			03/28/22 10:12	5
Sulfate	**53**		5.0		mg/L			03/28/22 10:12	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:08	1
Arsenic	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:08	1
Barium	**0.15**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:08	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:08	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 22:08	1
Cadmium	**0.00044**		0.00010		mg/L		03/29/22 09:00	04/05/22 22:08	1
Calcium	**77.0**		0.50		mg/L		03/29/22 09:00	04/05/22 22:08	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:08	1
Cobalt	**0.0011**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:08	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:08	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 22:08	1
Molybdenum	**0.0032**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:08	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:08	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:08	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 13:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**290**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			03/23/22 14:56	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.389**		0.204	0.207	1.00	0.243	pCi/L	03/28/22 09:50	04/22/22 09:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*92.8*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:34*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.693**		0.267	0.274	1.00	0.367	pCi/L	03/28/22 10:39	04/21/22 13:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*92.8*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*
Y Carrier	*90.5*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-1RD - CCR
Date Collected: 03/21/22 14:05
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-2
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.08		0.336	0.343	5.00	0.367	pCi/L		04/22/22 16:11	1

Client Sample ID: MW-2R - CCR

Date Collected: 03/21/22 14:55
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**100**		5.0		mg/L			03/28/22 10:28	5
Fluoride	<0.50		0.50		mg/L			03/28/22 10:28	5
Sulfate	**230**		5.0		mg/L			03/28/22 10:28	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:11	1
Arsenic	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:11	1
Barium	**0.27**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:11	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:11	1
Boron	**3.9**		0.10		mg/L		03/29/22 09:00	04/05/22 22:11	1
Cadmium	**0.00013**		0.00010		mg/L		03/29/22 09:00	04/05/22 22:11	1
Calcium	**227**		0.50		mg/L		03/29/22 09:00	04/05/22 22:11	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:11	1
Cobalt	**0.0020**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:11	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:11	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 22:11	1
Molybdenum	**0.0022**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:11	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:11	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:11	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 13:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1160**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.8**	**HF**	0.1		SU			03/23/22 14:57	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.502	U	0.322	0.323	1.00	0.502	pCi/L	03/28/22 09:50	04/22/22 09:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*93.3*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:35*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.564**		0.337	0.341	1.00	0.511	pCi/L	03/28/22 10:39	04/21/22 13:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*93.3*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*
Y Carrier	*87.9*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-2R - CCR
Date Collected: 03/21/22 14:55
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-3
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.918		0.466	0.470	5.00	0.511	pCi/L		04/22/22 16:11	1

Client Sample ID: MW-3 - CCR

Date Collected: 03/21/22 16:35
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**46**		5.0		mg/L			03/28/22 10:43	5
Fluoride	<0.50		0.50		mg/L			03/28/22 10:43	5
Sulfate	**22**		5.0		mg/L			03/28/22 10:43	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:14	1
Arsenic	**0.0063**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:14	1
Barium	**0.34**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:14	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:14	1
Boron	**0.60**		0.10		mg/L		03/29/22 09:00	04/05/22 22:14	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 22:14	1
Calcium	**229**		0.50		mg/L		03/29/22 09:00	04/05/22 22:14	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:14	1
Cobalt	**0.0087**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:14	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:14	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 22:14	1
Molybdenum	**0.0058**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:14	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:14	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:14	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 13:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**928**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.7**	**HF**	0.1		SU			03/23/22 15:00	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.464**		0.282	0.285	1.00	0.381	pCi/L	03/28/22 09:50	04/22/22 09:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*92.6*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:35*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.522	U	0.334	0.337	1.00	0.522	pCi/L	03/28/22 10:39	04/21/22 13:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*92.6*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*
Y Carrier	*93.1*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:34*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-3 - CCR
Date Collected: 03/21/22 16:35
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-4
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.938		0.437	0.441	5.00	0.522	pCi/L		04/22/22 16:11	1

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-3R - CCR

Date Collected: 03/21/22 16:20
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-5

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**22**		5.0		mg/L			03/28/22 11:30	5
Fluoride	<0.50		0.50		mg/L			03/28/22 11:30	5
Sulfate	**8.1**		5.0		mg/L			03/28/22 11:30	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:18	1
Arsenic	**0.0026**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:18	1
Barium	**0.63**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:18	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:18	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 22:18	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 22:18	1
Calcium	**233**		0.50		mg/L		03/29/22 09:00	04/05/22 22:18	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:18	1
Cobalt	**0.00053**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:18	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:18	1
Lithium	**0.019**		0.010		mg/L		03/29/22 09:00	04/05/22 22:18	1
Molybdenum	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:18	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:18	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:18	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 13:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**790**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.7**	**HF**	0.1		SU			03/23/22 15:01	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.588**		0.318	0.323	1.00	0.427	pCi/L	03/28/22 09:50	04/22/22 09:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*98.3*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:33*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.485	U	0.308	0.310	1.00	0.485	pCi/L	03/28/22 10:39	04/21/22 13:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*98.3*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*
Y Carrier	*89.7*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-3R - CCR

Date Collected: 03/21/22 16:20
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-5

Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.990		0.443	0.448	5.00	0.485	pCi/L		04/22/22 16:11	1

Client Sample ID: MW-3RD - CCR

Date Collected: 03/21/22 17:25
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24**		5.0		mg/L			03/28/22 11:46	5
Fluoride	<0.50		0.50		mg/L			03/28/22 11:46	5
Sulfate	**75**		5.0		mg/L			03/28/22 11:46	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:21	1
Arsenic	**0.0038**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:21	1
Barium	**0.21**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:21	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:21	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 22:21	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 22:21	1
Calcium	**119**		0.50		mg/L		03/29/22 09:00	04/05/22 22:21	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:21	1
Cobalt	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:21	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:21	1
Lithium	**0.012**		0.010		mg/L		03/29/22 09:00	04/05/22 22:21	1
Molybdenum	**0.0036**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:21	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:21	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 13:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**470**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			03/23/22 14:52	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.538**		0.241	0.246	1.00	0.284	pCi/L	03/28/22 09:50	04/22/22 09:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*97.5*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:33*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.403**		0.232	0.235	1.00	0.350	pCi/L	03/28/22 10:39	04/21/22 13:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*97.5*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*
Y Carrier	*92.3*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-3RD - CCR
Date Collected: 03/21/22 17:25
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-6
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.941		0.335	0.340	5.00	0.350	pCi/L		04/22/22 16:11	1

Client Sample ID: MW-4 - CCR

Date Collected: 03/21/22 18:55
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-7
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27**		5.0		mg/L			03/28/22 12:32	5
Fluoride	<0.50		0.50		mg/L			03/28/22 12:32	5
Sulfate	**210**		5.0		mg/L			03/28/22 12:32	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0032**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:36	1
Arsenic	**0.0035**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:36	1
Barium	**0.23**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:36	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:36	1
Boron	**0.25**		0.10		mg/L		03/29/22 09:00	04/05/22 22:36	1
Cadmium	**0.0013**		0.00010		mg/L		03/29/22 09:00	04/05/22 22:36	1
Calcium	**208**		0.50		mg/L		03/29/22 09:00	04/05/22 22:36	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:36	1
Cobalt	**0.0013**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:36	1
Lead	**0.0019**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:36	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 22:36	1
Molybdenum	**0.0038**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:36	1
Selenium	**0.0052**		0.0050		mg/L		03/29/22 09:00	04/05/22 22:36	1
Thallium	**0.0034**		0.0010		mg/L		03/29/22 09:00	04/05/22 22:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 14:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**840**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.9**	**HF**	0.1		SU			03/23/22 15:02	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.325	U	0.196	0.197	1.00	0.325	pCi/L	03/28/22 09:50	04/22/22 09:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*95.3*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:34*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.371**		0.228	0.231	1.00	0.346	pCi/L	03/28/22 10:39	04/21/22 13:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*95.3*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*
Y Carrier	*90.5*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-4 - CCR
Date Collected: 03/21/22 18:55
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-7
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.531		0.301	0.304	5.00	0.346	pCi/L		04/22/22 16:11	1

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-2RD - CCR

Date Collected: 03/21/22 15:10
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-8

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**42**		5.0		mg/L			03/28/22 12:48	5
Fluoride	<0.50		0.50		mg/L			03/28/22 12:48	5
Sulfate	**84**		5.0		mg/L			03/28/22 12:48	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:52	1
Arsenic	**0.0025**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:52	1
Barium	**0.20**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:52	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:52	1
Boron	**0.16**		0.10		mg/L		03/29/22 09:00	04/05/22 22:52	1
Cadmium	**0.00048**		0.00010		mg/L		03/29/22 09:00	04/05/22 22:52	1
Calcium	**144**		0.50		mg/L		03/29/22 09:00	04/05/22 22:52	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:52	1
Cobalt	**0.0030**		0.00050		mg/L		03/29/22 09:00	04/05/22 22:52	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:52	1
Lithium	**0.012**		0.010		mg/L		03/29/22 09:00	04/05/22 22:52	1
Molybdenum	**0.0026**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:52	1
Selenium	**0.024**		0.0050		mg/L		03/29/22 09:00	04/05/22 22:52	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:52	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 14:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**554**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.1**	**HF**	0.1		SU			03/23/22 15:03	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.868**		0.530	0.536	1.00	0.707	pCi/L	03/28/22 09:50	04/22/22 09:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*30.6*	*X*	*40 - 110*	*03/28/22 09:50*	*04/22/22 09:34*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.934	U	0.610	0.615	1.00	0.934	pCi/L	03/28/22 10:39	04/21/22 13:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*30.6*	*X*	*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*
Y Carrier	*90.1*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-2RD - CCR
Date Collected: 03/21/22 15:10
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-8
Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.74		0.808	0.816	5.00	0.934	pCi/L		04/22/22 17:10	1

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: Field Blank 1 - CCR

Date Collected: 03/21/22 18:10
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-9

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			03/28/22 13:04	1
Fluoride	<0.10		0.10		mg/L			03/28/22 13:04	1
Sulfate	<1.0		1.0		mg/L			03/28/22 13:04	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:55	1
Arsenic	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:55	1
Barium	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:55	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:55	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 22:55	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 22:55	1
Calcium	**1.3**		0.50		mg/L		03/29/22 09:00	04/05/22 22:55	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:55	1
Cobalt	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:55	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:55	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 22:55	1
Molybdenum	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:55	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:55	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:55	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 14:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**5.9**	**HF**	0.1		SU			03/23/22 15:04	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.364	U	0.230	0.231	1.00	0.364	pCi/L	03/28/22 09:50	04/22/22 09:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*61.7*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:35*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.604	U	0.359	0.360	1.00	0.604	pCi/L	03/28/22 10:39	04/21/22 13:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*61.7*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*
Y Carrier	*90.8*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:35*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: Field Blank 1 - CCR

Date Collected: 03/21/22 18:10
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-9

Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<0.604	U	0.426	0.428	5.00	0.604	pCi/L		04/22/22 16:11	1

Client Sample ID: Duplicate 1 - CCR

Date Collected: 03/21/22 00:00
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-10

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28**		5.0		mg/L			03/28/22 13:19	5
Fluoride	<0.50		0.50		mg/L			03/28/22 13:19	5
Sulfate	**87**		5.0		mg/L			03/28/22 13:19	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 22:58	1
Arsenic	**0.0037**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:58	1
Barium	**0.20**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:58	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:58	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 22:58	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 22:58	1
Calcium	**118**		0.50		mg/L		03/29/22 09:00	04/05/22 22:58	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:58	1
Cobalt	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:58	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 22:58	1
Lithium	**0.012**		0.010		mg/L		03/29/22 09:00	04/05/22 22:58	1
Molybdenum	**0.0035**		0.0020		mg/L		03/29/22 09:00	04/05/22 22:58	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 22:58	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 22:58	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 14:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**456**		50.0		mg/L			03/24/22 14:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			03/23/22 15:05	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.637**		0.227	0.234	1.00	0.214	pCi/L	03/28/22 09:50	04/22/22 09:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*104*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:36*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.585**		0.238	0.244	1.00	0.333	pCi/L	03/28/22 10:39	04/21/22 13:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*104*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:36*	*1*
Y Carrier	*90.8*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:36*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: Duplicate 1 - CCR

Date Collected: 03/21/22 00:00
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-10

Matrix: Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.22		0.329	0.338	5.00	0.333	pCi/L		04/22/22 16:11	1

Client Sample ID: Equipment Blank - CCR

Date Collected: 03/21/22 18:15
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-11

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			03/28/22 13:35	1
Fluoride	<0.10		0.10		mg/L			03/28/22 13:35	1
Sulfate	<1.0		1.0		mg/L			03/28/22 13:35	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 23:02	1
Arsenic	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 23:02	1
Barium	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 23:02	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 23:02	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 23:02	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 23:02	1
Calcium	**1.0**		0.50		mg/L		03/29/22 09:00	04/05/22 23:02	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 23:02	1
Cobalt	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 23:02	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 23:02	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 23:02	1
Molybdenum	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 23:02	1
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 23:02	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 23:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:10	04/04/22 14:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			03/24/22 15:15	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.1**	**HF**	0.1		SU			03/23/22 15:09	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.219	U	0.0909	0.0909	1.00	0.219	pCi/L	03/28/22 09:50	04/22/22 09:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*100*		*40 - 110*	*03/28/22 09:50*	*04/22/22 09:36*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.326	U	0.200	0.200	1.00	0.326	pCi/L	03/28/22 10:39	04/21/22 13:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*100*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:36*	*1*
Y Carrier	*90.8*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:36*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-227425-11

Date Collected: 03/21/22 18:15

Matrix: Water

Date Received: 03/23/22 14:10

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<0.326	U	0.220	0.220	5.00	0.326	pCi/L		04/22/22 16:11	1

Definitions/Glossary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Qualifiers

Metals

Qualifier	Qualifier Description
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
X	Carrier is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-348523/3
Matrix: Water
Analysis Batch: 348523

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			03/28/22 09:25	1
Fluoride	<0.10		0.10		mg/L			03/28/22 09:25	1
Sulfate	<1.0		1.0		mg/L			03/28/22 09:25	1

Lab Sample ID: LCS 310-348523/4
Matrix: Water
Analysis Batch: 348523

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.1		mg/L		101	90 - 110
Fluoride	2.00	1.96		mg/L		98	90 - 110
Sulfate	10.0	10.3		mg/L		103	90 - 110

Lab Sample ID: 310-227425-6 MS
Matrix: Water
Analysis Batch: 348523

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	24		25.0	49.0		mg/L		100	80 - 120
Fluoride	<0.50		5.00	5.00		mg/L		100	80 - 120
Sulfate	75		25.0	102		mg/L		105	80 - 120

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 348523

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	24		25.0	48.6		mg/L		98	80 - 120	1	15
Fluoride	<0.50		5.00	4.98		mg/L		100	80 - 120	0	15
Sulfate	75		25.0	101		mg/L		104	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-347976/1-A
Matrix: Water
Analysis Batch: 348912

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 347976

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 21:46	1
Arsenic	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 21:46	1
Barium	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 21:46	1
Beryllium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 21:46	1
Boron	<0.10		0.10		mg/L		03/29/22 09:00	04/05/22 21:46	1
Cadmium	<0.00010		0.00010		mg/L		03/29/22 09:00	04/05/22 21:46	1
Calcium	<0.50		0.50		mg/L		03/29/22 09:00	04/05/22 21:46	1
Chromium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 21:46	1
Cobalt	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 21:46	1
Lead	<0.00050		0.00050		mg/L		03/29/22 09:00	04/05/22 21:46	1
Lithium	<0.010		0.010		mg/L		03/29/22 09:00	04/05/22 21:46	1
Molybdenum	<0.0020		0.0020		mg/L		03/29/22 09:00	04/05/22 21:46	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-347976/1-A
Matrix: Water
Analysis Batch: 348912

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 347976

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	<0.0050		0.0050		mg/L		03/29/22 09:00	04/05/22 21:46	1
Thallium	<0.0010		0.0010		mg/L		03/29/22 09:00	04/05/22 21:46	1

Lab Sample ID: LCS 310-347976/2-A
Matrix: Water
Analysis Batch: 348912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 347976

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.199		mg/L		100	80 - 120
Arsenic	0.200	0.194		mg/L		97	80 - 120
Barium	0.100	0.105		mg/L		105	80 - 120
Beryllium	0.100	0.0935		mg/L		93	80 - 120
Boron	0.200	0.165		mg/L		83	80 - 120
Cadmium	0.100	0.0976		mg/L		98	80 - 120
Calcium	2.00	2.19		mg/L		110	80 - 120
Chromium	0.100	0.101		mg/L		101	80 - 120
Cobalt	0.100	0.106		mg/L		106	80 - 120
Lead	0.200	0.202		mg/L		101	80 - 120
Lithium	0.200	0.182		mg/L		91	80 - 120
Molybdenum	0.200	0.196		mg/L		98	80 - 120
Selenium	0.400	0.381		mg/L		95	80 - 120
Thallium	0.200	0.203		mg/L		102	80 - 120

Lab Sample ID: 310-227425-6 MS
Matrix: Water
Analysis Batch: 348912

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 347976

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.0020		0.200	0.213		mg/L		106	75 - 125
Arsenic	0.0038		0.200	0.207		mg/L		102	75 - 125
Barium	0.21		0.100	0.308		mg/L		101	75 - 125
Beryllium	<0.0010		0.100	0.0956		mg/L		96	75 - 125
Boron	<0.10		0.200	0.229		mg/L		114	75 - 125
Cadmium	<0.00010		0.100	0.104		mg/L		104	75 - 125
Calcium	119		2.00	122.6	4	mg/L		159	75 - 125
Chromium	<0.0050		0.100	0.0961		mg/L		96	75 - 125
Cobalt	<0.00050		0.100	0.103		mg/L		103	75 - 125
Lead	<0.00050		0.200	0.201		mg/L		100	75 - 125
Lithium	0.012		0.200	0.204		mg/L		96	75 - 125
Molybdenum	0.0036		0.200	0.207		mg/L		102	75 - 125
Selenium	<0.0050		0.400	0.409		mg/L		102	75 - 125
Thallium	<0.0010		0.200	0.205		mg/L		102	75 - 125

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 348912

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 347976

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.0020		0.200	0.214		mg/L		107	75 - 125	1	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 348912

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 347976

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.0038		0.200	0.209		mg/L		103	75 - 125	1	20
Barium	0.21		0.100	0.311		mg/L		105	75 - 125	1	20
Beryllium	<0.0010		0.100	0.0976		mg/L		98	75 - 125	2	20
Boron	<0.10		0.200	0.242		mg/L		121	75 - 125	5	20
Cadmium	<0.00010		0.100	0.105		mg/L		105	75 - 125	1	20
Calcium	119		2.00	123.2	4	mg/L		185	75 - 125	0	20
Chromium	<0.0050		0.100	0.0978		mg/L		98	75 - 125	2	20
Cobalt	<0.00050		0.100	0.107		mg/L		106	75 - 125	3	20
Lead	<0.00050		0.200	0.206		mg/L		103	75 - 125	3	20
Lithium	0.012		0.200	0.204		mg/L		96	75 - 125	0	20
Molybdenum	0.0036		0.200	0.211		mg/L		104	75 - 125	2	20
Selenium	<0.0050		0.400	0.415		mg/L		104	75 - 125	1	20
Thallium	<0.0010		0.200	0.213		mg/L		107	75 - 125	4	20

Lab Sample ID: 310-227425-11 DU
Matrix: Water
Analysis Batch: 348912

Client Sample ID: Equipment Blank - CCR
Prep Type: Total/NA
Prep Batch: 347976

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	<0.0020			<0.0020		mg/L				NC	20
Arsenic	<0.0020			<0.0020		mg/L				NC	20
Barium	<0.0020			<0.0020		mg/L				NC	20
Beryllium	<0.0010			<0.0010		mg/L				NC	20
Boron	ND	^3+		<0.10	^3+	mg/L				NC	20
Boron	<0.10			<0.10		mg/L				NC	20
Cadmium	<0.00010			<0.00010		mg/L				NC	20
Calcium	1.0	^2		<0.50		mg/L				NC	20
Calcium	1.0			<0.50		mg/L				NC	20
Chromium	<0.0050			<0.0050		mg/L				NC	20
Cobalt	<0.00050			<0.00050		mg/L				NC	20
Lead	<0.00050			<0.00050		mg/L				NC	20
Lithium	<0.010			<0.010		mg/L				NC	20
Molybdenum	<0.0020			<0.0020		mg/L				NC	20
Selenium	<0.0050			<0.0050		mg/L				NC	20
Thallium	<0.0010			<0.0010		mg/L				NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-348540/1-A
Matrix: Water
Analysis Batch: 348747

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 348540

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00020		0.00020		mg/L		04/01/22 14:09	04/04/22 13:34	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 310-348540/2-A
Matrix: Water
Analysis Batch: 348747

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 348540

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00167	0.00161		mg/L		96	80 - 120		

Lab Sample ID: 310-227425-6 MS
Matrix: Water
Analysis Batch: 348747

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 348540

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	<0.00020		0.00167	0.00152		mg/L		91	80 - 120		

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 348747

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 348540

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	<0.00020		0.00167	0.00153		mg/L		92	80 - 120	0	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-347668/1
Matrix: Water
Analysis Batch: 347668

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			03/24/22 14:24	1

Lab Sample ID: LCS 310-347668/2
Matrix: Water
Analysis Batch: 347668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			1000	916.0		mg/L		92	90 - 110		

Lab Sample ID: 310-227425-6 DU
Matrix: Water
Analysis Batch: 347668

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	470			472.0		mg/L				0.4	20

Lab Sample ID: MB 310-347676/1
Matrix: Water
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			03/24/22 15:15	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 310-347676/2
Matrix: Water
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	914.0		mg/L		91	90 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-347514/56
Matrix: Water
Analysis Batch: 347514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.1		SU		101	98 - 102

Lab Sample ID: LCS 310-347514/82
Matrix: Water
Analysis Batch: 347514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.1		SU		101	98 - 102

Lab Sample ID: 310-227425-6 DU
Matrix: Water
Analysis Batch: 347514

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.2	HF	7.2		SU		0.3	20

Lab Sample ID: 310-227425-11 DU
Matrix: Water
Analysis Batch: 347514

Client Sample ID: Equipment Blank - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	6.1	HF	6.1		SU		0.2	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-557418/22-A
Matrix: Water
Analysis Batch: 561544

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 557418

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.255	U	0.107	0.108	1.00	0.255	pCi/L	03/28/22 09:50	04/22/22 11:25	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*103*		*40 - 110*	*03/28/22 09:50*	*04/22/22 11:25*	*1*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-557418/1-A
Matrix: Water
Analysis Batch: 561544

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 557418

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			11.3	10.55		1.32	1.00	0.369	pCi/L	93	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Barium	*98.8*		*40 - 110*

Lab Sample ID: 310-227425-6 MS
Matrix: Water
Analysis Batch: 561543

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 557418

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226	0.538		11.3	11.33		1.35	1.00	0.242	pCi/L	95	60 - 140		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Barium	*98.0*		*40 - 110*

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 561543

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 557418

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226	0.538		11.3	11.07		1.33	1.00	0.304	pCi/L	93	60 - 140	0.1	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Barium	*89.9*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-557419/22-A
Matrix: Water
Analysis Batch: 561504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 557419

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.360	U	0.222	0.223	1.00	0.360	pCi/L	03/28/22 10:39	04/21/22 13:38	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*103*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:38*	*1*
Y Carrier	*87.9*		*40 - 110*	*03/28/22 10:39*	*04/21/22 13:38*	*1*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-557419/1-A
Matrix: Water
Analysis Batch: 561497

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 557419

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.69	8.647		1.01	1.00	0.394	pCi/L	100	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Barium	*98.8*		*40 - 110*
Y Carrier	*89.0*		*40 - 110*

Lab Sample ID: 310-227425-6 MS
Matrix: Water
Analysis Batch: 561497

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 557419

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228	0.403		8.68	8.349		0.994	1.00	0.395	pCi/L	92	60 - 140		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Barium	*98.0*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

Lab Sample ID: 310-227425-6 MSD
Matrix: Water
Analysis Batch: 561497

Client Sample ID: MW-3RD - CCR
Prep Type: Total/NA
Prep Batch: 557419

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228	0.403		8.69	7.789		0.960	1.00	0.364	pCi/L	85	60 - 140	0.29	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Barium	*89.9*		*40 - 110*
Y Carrier	*88.6*		*40 - 110*

HPLC/IC

Analysis Batch: 348523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	9056A	
310-227425-2	MW-1RD - CCR	Total/NA	Water	9056A	
310-227425-3	MW-2R - CCR	Total/NA	Water	9056A	
310-227425-4	MW-3 - CCR	Total/NA	Water	9056A	
310-227425-5	MW-3R - CCR	Total/NA	Water	9056A	
310-227425-6	MW-3RD - CCR	Total/NA	Water	9056A	
310-227425-7	MW-4 - CCR	Total/NA	Water	9056A	
310-227425-8	MW-2RD - CCR	Total/NA	Water	9056A	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	9056A	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	9056A	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	9056A	
MB 310-348523/3	Method Blank	Total/NA	Water	9056A	
LCS 310-348523/4	Lab Control Sample	Total/NA	Water	9056A	
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	9056A	
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	9056A	

Metals

Prep Batch: 347976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	3005A	
310-227425-2	MW-1RD - CCR	Total/NA	Water	3005A	
310-227425-3	MW-2R - CCR	Total/NA	Water	3005A	
310-227425-4	MW-3 - CCR	Total/NA	Water	3005A	
310-227425-5	MW-3R - CCR	Total/NA	Water	3005A	
310-227425-6	MW-3RD - CCR	Total/NA	Water	3005A	
310-227425-7	MW-4 - CCR	Total/NA	Water	3005A	
310-227425-8	MW-2RD - CCR	Total/NA	Water	3005A	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	3005A	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	3005A	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	3005A	
MB 310-347976/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-347976/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	3005A	
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	3005A	
310-227425-11 DU	Equipment Blank - CCR	Total/NA	Water	3005A	

Prep Batch: 348540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	7470A	
310-227425-2	MW-1RD - CCR	Total/NA	Water	7470A	
310-227425-3	MW-2R - CCR	Total/NA	Water	7470A	
310-227425-4	MW-3 - CCR	Total/NA	Water	7470A	
310-227425-5	MW-3R - CCR	Total/NA	Water	7470A	
310-227425-6	MW-3RD - CCR	Total/NA	Water	7470A	
310-227425-7	MW-4 - CCR	Total/NA	Water	7470A	
310-227425-8	MW-2RD - CCR	Total/NA	Water	7470A	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	7470A	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	7470A	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	7470A	
MB 310-348540/1-A	Method Blank	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 348540 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-348540/2-A	Lab Control Sample	Total/NA	Water	7470A	
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	7470A	
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	7470A	

Analysis Batch: 348747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	7470A	348540
310-227425-2	MW-1RD - CCR	Total/NA	Water	7470A	348540
310-227425-3	MW-2R - CCR	Total/NA	Water	7470A	348540
310-227425-4	MW-3 - CCR	Total/NA	Water	7470A	348540
310-227425-5	MW-3R - CCR	Total/NA	Water	7470A	348540
310-227425-6	MW-3RD - CCR	Total/NA	Water	7470A	348540
310-227425-7	MW-4 - CCR	Total/NA	Water	7470A	348540
310-227425-8	MW-2RD - CCR	Total/NA	Water	7470A	348540
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	7470A	348540
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	7470A	348540
310-227425-11	Equipment Blank - CCR	Total/NA	Water	7470A	348540
MB 310-348540/1-A	Method Blank	Total/NA	Water	7470A	348540
LCS 310-348540/2-A	Lab Control Sample	Total/NA	Water	7470A	348540
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	7470A	348540
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	7470A	348540

Analysis Batch: 348912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	6020B	347976
310-227425-2	MW-1RD - CCR	Total/NA	Water	6020B	347976
310-227425-3	MW-2R - CCR	Total/NA	Water	6020B	347976
310-227425-4	MW-3 - CCR	Total/NA	Water	6020B	347976
310-227425-5	MW-3R - CCR	Total/NA	Water	6020B	347976
310-227425-6	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-7	MW-4 - CCR	Total/NA	Water	6020B	347976
310-227425-8	MW-2RD - CCR	Total/NA	Water	6020B	347976
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	6020B	347976
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	6020B	347976
310-227425-11	Equipment Blank - CCR	Total/NA	Water	6020B	347976
MB 310-347976/1-A	Method Blank	Total/NA	Water	6020B	347976
LCS 310-347976/2-A	Lab Control Sample	Total/NA	Water	6020B	347976
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-11 DU	Equipment Blank - CCR	Total/NA	Water	6020B	347976

Analysis Batch: 348918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	6020B	347976
310-227425-2	MW-1RD - CCR	Total/NA	Water	6020B	347976
310-227425-3	MW-2R - CCR	Total/NA	Water	6020B	347976
310-227425-4	MW-3 - CCR	Total/NA	Water	6020B	347976
310-227425-5	MW-3R - CCR	Total/NA	Water	6020B	347976
310-227425-6	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-7	MW-4 - CCR	Total/NA	Water	6020B	347976
310-227425-8	MW-2RD - CCR	Total/NA	Water	6020B	347976

Metals (Continued)

Analysis Batch: 348918 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	6020B	347976
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	6020B	347976
310-227425-11	Equipment Blank - CCR	Total/NA	Water	6020B	347976
MB 310-347976/1-A	Method Blank	Total/NA	Water	6020B	347976
LCS 310-347976/2-A	Lab Control Sample	Total/NA	Water	6020B	347976
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	6020B	347976
310-227425-11 DU	Equipment Blank - CCR	Total/NA	Water	6020B	347976

General Chemistry

Analysis Batch: 347514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-2	MW-1RD - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-3	MW-2R - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-4	MW-3 - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-5	MW-3R - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-6	MW-3RD - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-7	MW-4 - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-8	MW-2RD - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	
LCS 310-347514/56	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 310-347514/82	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-227425-6 DU	MW-3RD - CCR	Total/NA	Water	SM 4500 H+ B	
310-227425-11 DU	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 347668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	SM 2540C	
310-227425-2	MW-1RD - CCR	Total/NA	Water	SM 2540C	
310-227425-3	MW-2R - CCR	Total/NA	Water	SM 2540C	
310-227425-4	MW-3 - CCR	Total/NA	Water	SM 2540C	
310-227425-5	MW-3R - CCR	Total/NA	Water	SM 2540C	
310-227425-6	MW-3RD - CCR	Total/NA	Water	SM 2540C	
310-227425-7	MW-4 - CCR	Total/NA	Water	SM 2540C	
310-227425-8	MW-2RD - CCR	Total/NA	Water	SM 2540C	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	SM 2540C	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	SM 2540C	
MB 310-347668/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-347668/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-227425-6 DU	MW-3RD - CCR	Total/NA	Water	SM 2540C	

Analysis Batch: 347676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-11	Equipment Blank - CCR	Total/NA	Water	SM 2540C	
MB 310-347676/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-347676/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 557418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	PrecSep-21	
310-227425-2	MW-1RD - CCR	Total/NA	Water	PrecSep-21	
310-227425-3	MW-2R - CCR	Total/NA	Water	PrecSep-21	
310-227425-4	MW-3 - CCR	Total/NA	Water	PrecSep-21	
310-227425-5	MW-3R - CCR	Total/NA	Water	PrecSep-21	
310-227425-6	MW-3RD - CCR	Total/NA	Water	PrecSep-21	
310-227425-7	MW-4 - CCR	Total/NA	Water	PrecSep-21	
310-227425-8	MW-2RD - CCR	Total/NA	Water	PrecSep-21	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	PrecSep-21	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	PrecSep-21	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	PrecSep-21	
MB 160-557418/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-557418/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	PrecSep-21	
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	PrecSep-21	

Prep Batch: 557419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-227425-1	MW-1 - CCR	Total/NA	Water	PrecSep_0	
310-227425-2	MW-1RD - CCR	Total/NA	Water	PrecSep_0	
310-227425-3	MW-2R - CCR	Total/NA	Water	PrecSep_0	
310-227425-4	MW-3 - CCR	Total/NA	Water	PrecSep_0	
310-227425-5	MW-3R - CCR	Total/NA	Water	PrecSep_0	
310-227425-6	MW-3RD - CCR	Total/NA	Water	PrecSep_0	
310-227425-7	MW-4 - CCR	Total/NA	Water	PrecSep_0	
310-227425-8	MW-2RD - CCR	Total/NA	Water	PrecSep_0	
310-227425-9	Field Blank 1 - CCR	Total/NA	Water	PrecSep_0	
310-227425-10	Duplicate 1 - CCR	Total/NA	Water	PrecSep_0	
310-227425-11	Equipment Blank - CCR	Total/NA	Water	PrecSep_0	
MB 160-557419/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-557419/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
310-227425-6 MS	MW-3RD - CCR	Total/NA	Water	PrecSep_0	
310-227425-6 MSD	MW-3RD - CCR	Total/NA	Water	PrecSep_0	

Client Sample ID: MW-1 - CCR

Lab Sample ID: 310-227425-1

Date Collected: 03/21/22 13:40

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 09:56	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 21:52	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 21:52	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:09	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:39	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 14:55	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561544	04/22/22 07:42	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-1RD - CCR

Lab Sample ID: 310-227425-2

Date Collected: 03/21/22 14:05

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 10:12	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:08	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:08	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:41	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 14:56	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561544	04/22/22 09:34	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-2R - CCR

Lab Sample ID: 310-227425-3

Date Collected: 03/21/22 14:55

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 10:28	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:11	SAP	TAL CF

Client Sample ID: MW-2R - CCR

Lab Sample ID: 310-227425-3

Date Collected: 03/21/22 14:55

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:11	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:43	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 14:57	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561544	04/22/22 09:35	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-3 - CCR

Lab Sample ID: 310-227425-4

Date Collected: 03/21/22 16:35

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 10:43	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:14	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:14	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:45	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:00	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561544	04/22/22 09:35	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-3R - CCR

Lab Sample ID: 310-227425-5

Date Collected: 03/21/22 16:20

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 11:30	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:18	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:18	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:47	EAM	TAL CF

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-3R - CCR
Date Collected: 03/21/22 16:20
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:01	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561543	04/22/22 09:33	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-3RD - CCR
Date Collected: 03/21/22 17:25
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 11:46	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:21	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:21	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 13:49	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 14:52	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561543	04/22/22 09:33	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-4 - CCR
Date Collected: 03/21/22 18:55
Date Received: 03/23/22 14:10

Lab Sample ID: 310-227425-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 12:32	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:36	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:36	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 14:00	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:02	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561543	04/22/22 09:34	FLC	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: MW-4 - CCR

Lab Sample ID: 310-227425-7

Date Collected: 03/21/22 18:55

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: MW-2RD - CCR

Lab Sample ID: 310-227425-8

Date Collected: 03/21/22 15:10

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 12:48	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:52	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:52	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 14:02	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:03	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561543	04/22/22 09:34	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561624	04/22/22 17:10	EMH	TAL SL

Client Sample ID: Field Blank 1 - CCR

Lab Sample ID: 310-227425-9

Date Collected: 03/21/22 18:10

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	348523	03/28/22 13:04	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:55	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:55	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 14:04	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:04	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561566	04/22/22 09:35	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561497	04/21/22 13:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-227425-10

Date Collected: 03/21/22 00:00

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	348523	03/28/22 13:19	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 22:58	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 22:58	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 14:06	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347668	03/24/22 14:24	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:05	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561566	04/22/22 09:36	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561504	04/21/22 13:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-227425-11

Date Collected: 03/21/22 18:15

Matrix: Water

Date Received: 03/23/22 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	348523	03/28/22 13:35	CTB	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348912	04/05/22 23:02	SAP	TAL CF
Total/NA	Prep	3005A			347976	03/29/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	348918	04/05/22 23:02	SAP	TAL CF
Total/NA	Prep	7470A			348540	04/01/22 14:10	EAM	TAL CF
Total/NA	Analysis	7470A		1	348747	04/04/22 14:09	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	347676	03/24/22 15:15	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	347514	03/23/22 15:09	JAJ	TAL CF
Total/NA	Prep	PrecSep-21			557418	03/28/22 09:50	LPS	TAL SL
Total/NA	Analysis	9315		1	561566	04/22/22 09:36	FLC	TAL SL
Total/NA	Prep	PrecSep_0			557419	03/28/22 10:39	LPS	TAL SL
Total/NA	Analysis	9320		1	561504	04/21/22 13:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	561618	04/22/22 16:11	SCB	TAL SL

Laboratory References:

TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 310-227425-1
Project/Site: SKB Lansing CCR Monitoring

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	019-999-319	12-31-22

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-22
California	Los Angeles County Sanitation Districts	10259	06-30-22
California	State	2886	07-01-22
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	11-30-22
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-22
Kentucky (DW)	State	KY90125	12-31-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-22
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-22
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-23
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	NELAP	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	02-28-23
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020B	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

eurofins | Environment Testing America

310-227425 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GW + Env Services

City/State: CITY: Eagan | STATE: MN | Project:

Receipt Information

Date/Time Received: DATE: 3-23-22 | TIME: 1410 | Received By: ML

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes* Cooler ID

Multiple Coolers? ☑ Yes ☐ No *If yes* Cooler # 1 of 4

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other. ☐ NONE

Thermometer ID: N | Correction Factor (°C): 0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.3 | Corrected Temp (°C): 1.3

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used		
Uncorrected Temp (°C)		
Corrected Temp (°C)		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GW + Env Services

City/State: CITY Eagan | STATE MN | Project:

Receipt Information

Date/Time Received: DATE 3-23-22 | TIME 1410 | Received By: AL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other._____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes ☐ No	*If yes* Cooler ID	
Multiple Coolers?	☑ Yes ☐ No	*If yes* Cooler # 2 of 4	
Cooler Custody Seals Present? No	☑ Yes ☐ No	*If yes* Cooler custody seals intact? ☐ Yes ☐ No	
Sample Custody Seals Present? No	☐ Yes ☑ No	*If yes* Sample custody seals intact? ☐ Yes ☐ No	
Trip Blank Present?	☐ Yes ☐ No	*If yes* Which VOA samples are in cooler? ↓	

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other._____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): 0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.8 | Corrected Temp (°C): 0.8

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used		
Uncorrected Temp (°C)		
Corrected Temp (°C)		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GW + Env Services

City/State: CITY Eagan | STATE MN | Project:

Receipt Information

Date/Time Received: DATE 3-23-22 | TIME 1410 | Received By: AL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes* Cooler ID

Multiple Coolers? ☑ Yes ☐ No *If yes* Cooler # 3 of 4

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other_____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): 0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0 5 | Corrected Temp (°C): 0 5

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used		
Uncorrected Temp (°C)		
Corrected Temp (°C)		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GW + Env Services

City/State: CITY: Eagan | STATE: MN | Project:

Receipt Information

Date/Time Received: DATE: 3 23 22 | TIME: 1410 | Received By: RL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other._____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes* Cooler ID

Multiple Coolers? ☑ Yes ☐ No *If yes* Cooler # 4 of 4

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other._____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): 0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1 2 | Corrected Temp (°C): 1 2

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used		
Uncorrected Temp (°C)		
Corrected Temp (°C)		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
a) *If yes* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

Eurofins Minneapolis SC
213

eurofins | Environment Testing America

Client Information	Sampler: N Schlagel,	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-68661-19671 1
Client Contact: Mr Nicholas Schlagel	Phone: 651-792 6065	E-Mail: Zach.Bindert@Eurofinset.com	State of Origin:	Page: Page 1 of 2
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested:			
City: Eagan	TAT Requested (days): Standard			
State, Zip: MN, 55121-1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline.com	WO #:			
Project Name: SKB Lansing CCR Monitoring	Project #: 31013984			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A	HCL	M	Hexane
B	NaOH	N	None
C	Zn Acetate	O	AsNaO2
D	Nitric Acid	P	Na2O4S
E	NaHSO4	Q	Na2SO3
F	MeOH	R	Na2S2O3
G	Amchlor	S	H2SO4
H	Ascorbic Acid	T	TSP Dodecahydrate
I	Ice	U	Acetone
J	DI Water	V	MCAA
K	EDTA	W	pH 4-5
L	EDA	Z	other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226 Radium 226	Ra226Ra228_GFPC Local Method	9320_Ra228 Radium 228	9056A_ORGFM_28D Chloride, Fluoride, Sulfate	Total Metals 6020B (Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Pb,Li,Mo,Se,Ti) 7470A Meoury	2540C_Calcd TDS SM4500_H+ pH							Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	D	N	D	N									
MW-1 CCR	3/21/22	1340	6	Water			X	X	X	X	X	X								5	
MW-1RD CCR	3/21/22	1405	6	Water			X	X	X	X	X	X								5	
MW-2R CCR	3/21/22	1455	6	Water			X	X	X	X	X	X								5	
MW-3 CCR	3/21/22	1635	6	Water			X	X	X	X	X	X								5	
MW-3R CCR	3/21/22	1620	6	Water			X	X	X	X	X	X								5	
MW-3RD CCR	3/21/22	1725	6	Water		Y	X	X	X	X	X	X								5	MS/MSD
MW-4 - CCR	3/21/22	1955	6	Water			X	X	X	X	X	X								5	
MW-2RD CCR	3/21/22	1510	6	Water			X	X	X	X	X	X								5	
Field Blank 1 - CCR	3/21/22	1810	6	Water			X	X	X	X	X	X								5	
Duplicate 1 CCR	3/21/22	—	6	Water			X	X	X	X	X	X								5	
Equipment Blank CCR	3/21/22	1915	6	Water			X	X	X	X	X	X								5	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III IV Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	3/22/22 0940	GES	Acunjacka	3-22-22 0940	Eurofins
2	Acunjacka	3-22-22 1700	Eurofins			
3				PK	3-23-22 1410	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-227425-1

Login Number: 227425
List Number: 1
Creator: Bindert, Zach T

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Tracer/Carrier Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-227425-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
310-227425-1	MW-1 - CCR	98.5
310-227425-2	MW-1RD - CCR	92.8
310-227425-3	MW-2R - CCR	93.3
310-227425-4	MW-3 - CCR	92.6
310-227425-5	MW-3R - CCR	98.3
310-227425-6	MW-3RD - CCR	97.5
310-227425-6 MS	MW-3RD - CCR	98.0
310-227425-6 MSD	MW-3RD - CCR	89.9
310-227425-7	MW-4 - CCR	95.3
310-227425-8	MW-2RD - CCR	30.6 X
310-227425-9	Field Blank 1 - CCR	61.7
310-227425-10	Duplicate 1 - CCR	104
310-227425-11	Equipment Blank - CCR	100
LCS 160-557418/1-A	Lab Control Sample	98.8
MB 160-557418/22-A	Method Blank	103

Tracer/Carrier Legend

Ba = Barium

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
310-227425-1	MW-1 - CCR	98.5	89.0
310-227425-2	MW-1RD - CCR	92.8	90.5
310-227425-3	MW-2R - CCR	93.3	87.9
310-227425-4	MW-3 - CCR	92.6	93.1
310-227425-5	MW-3R - CCR	98.3	89.7
310-227425-6	MW-3RD - CCR	97.5	92.3
310-227425-6 MS	MW-3RD - CCR	98.0	87.1
310-227425-6 MSD	MW-3RD - CCR	89.9	88.6
310-227425-7	MW-4 - CCR	95.3	90.5
310-227425-8	MW-2RD - CCR	30.6 X	90.1
310-227425-9	Field Blank 1 - CCR	61.7	90.8
310-227425-10	Duplicate 1 - CCR	104	90.8
310-227425-11	Equipment Blank - CCR	100	90.8
LCS 160-557419/1-A	Lab Control Sample	98.8	89.0
MB 160-557419/22-A	Method Blank	103	87.9

Tracer/Carrier Legend

Ba = Barium
Y = Y Carrier

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ANALYTICAL REPORT

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-236217-1
Client Project/Site: SKB Lansing CCR Monitoring
Sampling Event: CCR Monitoring

For:
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Attn: Megan Lindstrom

Authorized for release by:
8/18/2022 8:32:56 AM

Zach Bindert, Project Manager I
(319)277-2401
Zach.Bindert@et.eurofinsus.com

Table of Contents

Job ID: 310-236217-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-236217-1

Comments
No additional comments.

Receipt
The samples were received on 7/20/2022 2:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were -2.7º C, -1.5º C, -1.4º C, -0.9º C, -0.8º C and -0.4º C.

HPLC/IC
Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-1-CCR (310-236217-1), MW-1RD-CCR (310-236217-2), MW-2R-CCR (310-236217-3), MW-3-CCR (310-236217-4), MW-3R-CCR (310-236217-5), MW-3RD-CCR (310-236217-6), MW-4-CCR (310-236217-7), MW-2RD-CCR (310-236217-8) and Dup-1-CCR (310-236217-10). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Job ID: 310-236217-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-236217-2

Comments
No additional comments.

Receipt
The samples were received on 7/20/2022 2:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were -2.7º C, -1.5º C, -1.4º C, -0.9º C, -0.8º C and -0.4º C.

RAD
Methods 903.0, 9315, RA-06-RC: Radium 226 Batch 160-574945:
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-1-CCR (310-236217-1), MW-1RD-CCR (310-236217-2), MW-2R-CCR (310-236217-3), (LCS 160-574945/2-A), (LCSD 160-574945/3-A) and (MB 160-574945/1-A)

Methods 903.0, 9315: Radium-226 batch 574944
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
MW-3-CCR (310-236217-4), MW-3R-CCR (310-236217-5), MW-3RD-CCR (310-236217-6), MW-3RD-CCR (310-236217-6[MS]), MW-3RD-CCR (310-236217-6[MSD]), MW-4-CCR (310-236217-7), MW-2RD-CCR (310-236217-8), Field Blank 1-CCR (310-236217-9), Dup-1-CCR (310-236217-10), Equipment Blank-CCR (310-236217-11), (LCS 160-574944/2-A) and (MB 160-574944/1-A)

Job ID: 310-236217-2 (Continued)

Laboratory: Eurofins Cedar Falls (Continued)

Method 9320: Radium-228 prep batch 160-574956:

The following sample had a potential matrix interference causing a low Ba carrier recovery (47.9%). The low carrier recovery elevated the MDC above the RL. However the sample result is below the RL. The carrier recovery was within limits of 40-110%. The laboratory does not believe this excursion adversely affects the data. The data have been reported with the MDC achieved. MW-1-CCR (310-236217-1)

Methods 904.0, 9320, RA-06-RC: Radium-228 prep batch 160-574956:

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.MW-1-CCR (310-236217-1), MW-1RD-CCR (310-236217-2), MW-2R-CCR (310-236217-3), (LCS 160-574956/2-A), (LCSD 160-574956/3-A) and (MB 160-574956/1-A)

Methods 904.0, 9320: Radium 228 batch 574957:
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
MW-3-CCR (310-236217-4), MW-3R-CCR (310-236217-5), MW-3RD-CCR (310-236217-6), MW-3RD-CCR (310-236217-6[MS]), MW-3RD-CCR (310-236217-6[MSD]), MW-4-CCR (310-236217-7), MW-2RD-CCR (310-236217-8), Field Blank 1-CCR (310-236217-9), Dup-1-CCR (310-236217-10), Equipment Blank-CCR (310-236217-11), (LCS 160-574957/2-A) and (MB 160-574957/1-A)

Method PrecSep_0:

Method PrecSep_0: Radium-228 Prep Batch 160-574956

The following sample was prepared at a reduced aliquot due to Matrix: MW-2R-CCR (310-236217-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep_0: Radium-228 Prep Batch 160-574956

Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-1-CCR (310-236217-1), MW-1RD-CCR (310-236217-2) and MW-2R-CCR (310-236217-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21:

Method PrecSep-21: Radium-228 Prep Batch 160-574945

The following sample was prepared at a reduced aliquot due to Matrix: MW-2R-CCR (310-236217-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep-21: Radium-226 Prep Batch 160-574945

Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-1-CCR (310-236217-1), MW-1RD-CCR (310-236217-2) and MW-2R-CCR (310-236217-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-236217-1	MW-1-CCR	Water	07/18/22 13:30	07/20/22 14:20
310-236217-2	MW-1RD-CCR	Water	07/18/22 14:15	07/20/22 14:20
310-236217-3	MW-2R-CCR	Water	07/18/22 15:40	07/20/22 14:20
310-236217-4	MW-3-CCR	Water	07/19/22 07:35	07/20/22 14:20
310-236217-5	MW-3R-CCR	Water	07/19/22 08:15	07/20/22 14:20
310-236217-6	MW-3RD-CCR	Water	07/19/22 09:25	07/20/22 14:20
310-236217-7	MW-4-CCR	Water	07/19/22 10:50	07/20/22 14:20
310-236217-8	MW-2RD-CCR	Water	07/18/22 15:35	07/20/22 14:20
310-236217-9	Field Blank 1-CCR	Water	07/19/22 11:00	07/20/22 14:20
310-236217-10	Dup-1-CCR	Water	07/19/22 00:00	07/20/22 14:20
310-236217-11	Equipment Blank-CCR	Water	07/19/22 11:10	07/20/22 14:20

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Client Sample ID: MW-1-CCR — Lab Sample ID: 310-236217-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	160		5.0		mg/L	5		9056A	Total/NA
Sulfate	97		5.0		mg/L	5		9056A	Total/NA
Barium	0.15		0.0020		mg/L	1		6020B	Total/NA
Boron	0.21		0.10		mg/L	1		6020B	Total/NA
Calcium	170		0.50		mg/L	1		6020B	Total/NA
Lithium	0.046		0.010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	720		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-1RD-CCR — Lab Sample ID: 310-236217-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	23		5.0		mg/L	5		9056A	Total/NA
Sulfate	52		5.0		mg/L	5		9056A	Total/NA
Barium	0.14		0.0020		mg/L	1		6020B	Total/NA
Cadmium	0.00013		0.00010		mg/L	1		6020B	Total/NA
Calcium	74.7		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.00073		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.014		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0029		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	338		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2R-CCR — Lab Sample ID: 310-236217-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	95		5.0		mg/L	5		9056A	Total/NA
Sulfate	220		5.0		mg/L	5		9056A	Total/NA
Antimony	0.20		0.0020		mg/L	1		6020B	Total/NA
Arsenic	0.19		0.0020		mg/L	1		6020B	Total/NA
Barium	0.24		0.0020		mg/L	1		6020B	Total/NA
Boron	3.8		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.093		0.00010		mg/L	1		6020B	Total/NA
Calcium	203		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.087		0.00050		mg/L	1		6020B	Total/NA
Lead	0.19		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.19		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.19		0.0020		mg/L	1		6020B	Total/NA
Selenium	0.36		0.0050		mg/L	1		6020B	Total/NA
Thallium	0.18		0.0010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	1080		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3-CCR — Lab Sample ID: 310-236217-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24		5.0		mg/L	5		9056A	Total/NA
Sulfate	15		5.0		mg/L	5		9056A	Total/NA
Antimony	0.21		0.0020		mg/L	1		6020B	Total/NA
Arsenic	0.20		0.0020		mg/L	1		6020B	Total/NA
Barium	0.33		0.0020		mg/L	1		6020B	Total/NA
Boron	0.22		0.10		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample ID: MW-3-CCR (Continued) — Lab Sample ID: 310-236217-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.099		0.00010		mg/L	1		6020B	Total/NA
Calcium	228		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.093		0.00050		mg/L	1		6020B	Total/NA
Lead	0.20		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.20		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.21		0.0020		mg/L	1		6020B	Total/NA
Selenium	0.39		0.0050		mg/L	1		6020B	Total/NA
Thallium	0.20		0.0010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	896		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3R-CCR — Lab Sample ID: 310-236217-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	23		5.0		mg/L	5		9056A	Total/NA
Sulfate	5.0		5.0		mg/L	5		9056A	Total/NA
Antimony	0.018		0.0020		mg/L	1		6020B	Total/NA
Arsenic	0.019		0.0020		mg/L	1		6020B	Total/NA
Barium	0.57		0.0020		mg/L	1		6020B	Total/NA
Cadmium	0.0087		0.00010		mg/L	1		6020B	Total/NA
Calcium	213		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.0081		0.00050		mg/L	1		6020B	Total/NA
Lead	0.017		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.019		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.021		0.0020		mg/L	1		6020B	Total/NA
Selenium	0.034		0.0050		mg/L	1		6020B	Total/NA
Thallium	0.023		0.0010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	846		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3RD-CCR — Lab Sample ID: 310-236217-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27	F1	5.0		mg/L	5		9056A	Total/NA
Sulfate	83	F1	5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0035		0.0020		mg/L	1		6020B	Total/NA
Barium	0.18		0.0020		mg/L	1		6020B	Total/NA
Calcium	108		0.50		mg/L	1		6020B	Total/NA
Lithium	0.011		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0037		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	508		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-4-CCR — Lab Sample ID: 310-236217-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	41		5.0		mg/L	5		9056A	Total/NA
Sulfate	230		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0022		0.0020		mg/L	1		6020B	Total/NA
Barium	0.24		0.0020		mg/L	1		6020B	Total/NA
Boron	0.47		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.00015		0.00010		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-4-CCR (Continued) — Lab Sample ID: 310-236217-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	191		0.50		mg/L	1		6020B	Total/NA
Cobalt	0.00077		0.00050		mg/L	1		6020B	Total/NA
Lithium	0.017		0.010		mg/L	1		6020B	Total/NA
Total Dissolved Solids	906		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2RD-CCR — Lab Sample ID: 310-236217-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	37		5.0		mg/L	5		9056A	Total/NA
Sulfate	76		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0037		0.0020		mg/L	1		6020B	Total/NA
Barium	0.16		0.0020		mg/L	1		6020B	Total/NA
Boron	0.16		0.10		mg/L	1		6020B	Total/NA
Cadmium	0.00015		0.00010		mg/L	1		6020B	Total/NA
Calcium	123		0.50		mg/L	1		6020B	Total/NA
Lithium	0.012		0.010		mg/L	1		6020B	Total/NA
Molybdenum	0.0038		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	586		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank 1-CCR — Lab Sample ID: 310-236217-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.5		1.0		mg/L	1		9056A	Total/NA
Calcium	0.62		0.50		mg/L	1		6020B	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Dup-1-CCR — Lab Sample ID: 310-236217-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	26		5.0		mg/L	5		9056A	Total/NA
Sulfate	81		5.0		mg/L	5		9056A	Total/NA
Arsenic	0.0034		0.0020		mg/L	1		6020B	Total/NA
Barium	0.19		0.0020		mg/L	1		6020B	Total/NA
Calcium	116		0.50		mg/L	1		6020B	Total/NA
Molybdenum	0.0036		0.0020		mg/L	1		6020B	Total/NA
Total Dissolved Solids	492		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank-CCR — Lab Sample ID: 310-236217-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.5		1.0		mg/L	1		9056A	Total/NA
Calcium	0.54		0.50		mg/L	1		6020B	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1-CCR

Date Collected: 07/18/22 13:30
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**160**		5.0		mg/L			07/28/22 19:17	5
Fluoride	<0.50		0.50		mg/L			07/28/22 19:17	5
Sulfate	**97**		5.0		mg/L			07/28/22 19:17	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 01:23	1
Arsenic	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 01:23	1
Barium	**0.15**		0.0020		mg/L		07/26/22 08:45	08/04/22 19:48	1
Boron	**0.21**		0.10		mg/L		07/26/22 08:45	08/05/22 19:21	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 01:23	1
Calcium	**170**		0.50		mg/L		07/26/22 08:45	08/04/22 19:48	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 01:23	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 01:23	1
Lithium	**0.046**		0.010		mg/L		07/26/22 08:45	08/04/22 01:23	1
Molybdenum	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 01:23	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 01:23	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 01:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**720**		50.0		mg/L			07/21/22 15:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.9**	**HF**	0.1		SU			07/20/22 17:52	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.175	U	0.113	0.114	1.00	0.175	pCi/L	07/22/22 11:06	08/15/22 09:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*47.9*		*40 - 110*	*07/22/22 11:06*	*08/15/22 09:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<1.08	U G	0.672	0.675	1.00	1.08	pCi/L	07/22/22 11:53	08/05/22 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*47.9*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*
Y Carrier	*88.6*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<1.08	U	0.681	0.685	5.00	1.08	pCi/L		08/15/22 22:37	1

Client Sample ID: MW-1RD-CCR

Date Collected: 07/18/22 14:15
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**23**		5.0		mg/L			07/28/22 19:31	5
Fluoride	<0.50		0.50		mg/L			07/28/22 19:31	5
Sulfate	**52**		5.0		mg/L			07/28/22 19:31	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 01:26	1
Arsenic	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 01:26	1
Barium	**0.14**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:06	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/05/22 19:24	1
Cadmium	**0.00013**		0.00010		mg/L		07/26/22 08:45	08/04/22 01:26	1
Calcium	**74.7**		0.50		mg/L		07/26/22 08:45	08/04/22 20:06	1
Cobalt	**0.00073**		0.00050		mg/L		07/26/22 08:45	08/04/22 01:26	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 01:26	1
Lithium	**0.014**		0.010		mg/L		07/26/22 08:45	08/04/22 01:26	1
Molybdenum	**0.0029**		0.0020		mg/L		07/26/22 08:45	08/04/22 01:26	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 01:26	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 01:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**338**		50.0		mg/L			07/21/22 15:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			07/20/22 17:53	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.331**		0.105	0.109	1.00	0.0846	pCi/L	07/22/22 11:06	08/15/22 09:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.5*		*40 - 110*	*07/22/22 11:06*	*08/15/22 09:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.736**		0.355	0.362	1.00	0.479	pCi/L	07/22/22 11:53	08/05/22 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.5*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*
Y Carrier	*84.1*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.07**		0.370	0.378	5.00	0.479	pCi/L		08/15/22 22:37	1

Client Sample ID: MW-2R-CCR

Date Collected: 07/18/22 15:40
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	95		5.0		mg/L			07/28/22 19:45	5
Fluoride	<0.50		0.50		mg/L			07/28/22 19:45	5
Sulfate	220		5.0		mg/L			07/28/22 19:45	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.20		0.0020		mg/L		07/26/22 08:45	08/04/22 01:29	1
Arsenic	0.19		0.0020		mg/L		07/26/22 08:45	08/04/22 01:29	1
Barium	0.24		0.0020		mg/L		07/26/22 08:45	08/04/22 20:10	1
Boron	3.8		0.10		mg/L		07/26/22 08:45	08/05/22 19:27	1
Cadmium	0.093		0.00010		mg/L		07/26/22 08:45	08/04/22 01:29	1
Calcium	203		0.50		mg/L		07/26/22 08:45	08/04/22 20:10	1
Cobalt	0.087		0.00050		mg/L		07/26/22 08:45	08/04/22 01:29	1
Lead	0.19		0.00050		mg/L		07/26/22 08:45	08/04/22 01:29	1
Lithium	0.19		0.010		mg/L		07/26/22 08:45	08/04/22 01:29	1
Molybdenum	0.19		0.0020		mg/L		07/26/22 08:45	08/04/22 01:29	1
Selenium	0.36		0.0050		mg/L		07/26/22 08:45	08/04/22 01:29	1
Thallium	0.18		0.0010		mg/L		07/26/22 08:45	08/04/22 01:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1080		50.0		mg/L			07/21/22 15:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			07/20/22 17:59	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.327		0.132	0.135	1.00	0.145	pCi/L	07/22/22 11:06	08/15/22 09:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.5*		*40 - 110*	*07/22/22 11:06*	*08/15/22 09:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.675	U	0.449	0.453	1.00	0.675	pCi/L	07/22/22 11:53	08/05/22 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.5*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*
Y Carrier	*85.6*		*40 - 110*	*07/22/22 11:53*	*08/05/22 10:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.977		0.468	0.473	5.00	0.675	pCi/L		08/15/22 22:37	1

Client Sample ID: MW-3-CCR

Date Collected: 07/19/22 07:35
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24		5.0		mg/L			07/28/22 19:59	5
Fluoride	<0.50		0.50		mg/L			07/28/22 19:59	5
Sulfate	15		5.0		mg/L			07/28/22 19:59	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.21		0.0020		mg/L		07/26/22 08:45	08/04/22 01:33	1
Arsenic	0.20		0.0020		mg/L		07/26/22 08:45	08/04/22 01:33	1
Barium	0.33		0.0020		mg/L		07/26/22 08:45	08/04/22 20:13	1
Boron	0.22		0.10		mg/L		07/26/22 08:45	08/05/22 19:30	1
Cadmium	0.099		0.00010		mg/L		07/26/22 08:45	08/04/22 01:33	1
Calcium	228		0.50		mg/L		07/26/22 08:45	08/04/22 20:13	1
Cobalt	0.093		0.00050		mg/L		07/26/22 08:45	08/04/22 01:33	1
Lead	0.20		0.00050		mg/L		07/26/22 08:45	08/04/22 01:33	1
Lithium	0.20		0.010		mg/L		07/26/22 08:45	08/04/22 01:33	1
Molybdenum	0.21		0.0020		mg/L		07/26/22 08:45	08/04/22 01:33	1
Selenium	0.39		0.0050		mg/L		07/26/22 08:45	08/04/22 01:33	1
Thallium	0.20		0.0010		mg/L		07/26/22 08:45	08/04/22 01:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	896		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.1		SU			07/20/22 17:43	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.554		0.210	0.216	1.00	0.200	pCi/L	07/22/22 10:57	08/15/22 09:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*68.1*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:29*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.46		0.640	0.654	1.00	0.839	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*68.1*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*
Y Carrier	*86.4*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.02		0.674	0.689	5.00	0.839	pCi/L		08/17/22 17:26	1

Client Sample ID: MW-3R-CCR

Date Collected: 07/19/22 08:15
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-5

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		5.0		mg/L			07/28/22 20:13	5
Fluoride	<0.50		0.50		mg/L			07/28/22 20:13	5
Sulfate	5.0		5.0		mg/L			07/28/22 20:13	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.018		0.0020		mg/L		07/26/22 08:45	08/04/22 01:36	1
Arsenic	0.019		0.0020		mg/L		07/26/22 08:45	08/04/22 01:36	1
Barium	0.57		0.0020		mg/L		07/26/22 08:45	08/04/22 20:17	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/05/22 19:33	1
Cadmium	0.0087		0.00010		mg/L		07/26/22 08:45	08/04/22 01:36	1
Calcium	213		0.50		mg/L		07/26/22 08:45	08/04/22 20:17	1
Cobalt	0.0081		0.00050		mg/L		07/26/22 08:45	08/04/22 01:36	1
Lead	0.017		0.00050		mg/L		07/26/22 08:45	08/04/22 01:36	1
Lithium	0.019		0.010		mg/L		07/26/22 08:45	08/04/22 01:36	1
Molybdenum	0.021		0.0020		mg/L		07/26/22 08:45	08/04/22 01:36	1
Selenium	0.034		0.0050		mg/L		07/26/22 08:45	08/04/22 01:36	1
Thallium	0.023		0.0010		mg/L		07/26/22 08:45	08/04/22 01:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	846		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.1		SU			07/20/22 17:49	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.723		0.261	0.269	1.00	0.278	pCi/L	07/22/22 10:57	08/15/22 09:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*63.1*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:29*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.17		0.637	0.646	1.00	0.890	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*63.1*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*
Y Carrier	*86.7*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.90		0.688	0.700	5.00	0.890	pCi/L		08/17/22 17:26	1

Client Sample ID: MW-3RD-CCR

Date Collected: 07/19/22 09:25
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27**	**F1**	5.0		mg/L			07/28/22 20:27	5
Fluoride	<0.50	F1	0.50		mg/L			07/28/22 20:27	5
Sulfate	**83**	**F1**	5.0		mg/L			07/28/22 20:27	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020	F1	0.0020		mg/L		07/26/22 08:45	08/05/22 19:37	1
Arsenic	**0.0035**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:20	1
Barium	**0.18**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:20	1
Boron	<0.10	F2 F1	0.10		mg/L		07/26/22 08:45	08/05/22 19:37	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 20:20	1
Calcium	**108**		0.50		mg/L		07/26/22 08:45	08/04/22 20:20	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 20:20	1
Lead	<0.00050	F1	0.00050		mg/L		07/26/22 08:45	08/05/22 19:37	1
Lithium	**0.011**		0.010		mg/L		07/26/22 08:45	08/04/22 20:20	1
Molybdenum	**0.0037**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:20	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 20:20	1
Thallium	<0.0010	F1	0.0010		mg/L		07/26/22 08:45	08/05/22 19:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**508**		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.1**	**HF**	0.1		SU			07/20/22 18:14	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.671**		0.199	0.208	1.00	0.174	pCi/L	07/22/22 10:57	08/15/22 09:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*66.6*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:29*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.19**		0.526	0.537	1.00	0.713	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*66.6*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*
Y Carrier	*89.3*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.86**		0.562	0.576	5.00	0.713	pCi/L		08/17/22 17:26	1

Client Sample ID: MW-4-CCR

Date Collected: 07/19/22 10:50
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-7

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**41**		5.0		mg/L			07/28/22 21:38	5
Fluoride	<0.50		0.50		mg/L			07/28/22 21:38	5
Sulfate	**230**		5.0		mg/L			07/28/22 21:38	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:02	1
Arsenic	**0.0022**		0.0020		mg/L		07/26/22 08:45	08/04/22 02:02	1
Barium	**0.24**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:30	1
Boron	**0.47**		0.10		mg/L		07/26/22 08:45	08/05/22 19:59	1
Cadmium	**0.00015**		0.00010		mg/L		07/26/22 08:45	08/04/22 02:02	1
Calcium	**191**		0.50		mg/L		07/26/22 08:45	08/04/22 20:30	1
Cobalt	**0.00077**		0.00050		mg/L		07/26/22 08:45	08/04/22 02:02	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:02	1
Lithium	**0.017**		0.010		mg/L		07/26/22 08:45	08/04/22 02:02	1
Molybdenum	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:02	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 02:02	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 02:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**906**		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.8**	**HF**	0.1		SU			07/20/22 18:16	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.284**		0.121	0.123	1.00	0.134	pCi/L	07/22/22 10:57	08/15/22 09:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.8*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:31*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.497**		0.322	0.325	1.00	0.472	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*91.8*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*
Y Carrier	*85.6*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.781**		0.344	0.347	5.00	0.472	pCi/L		08/17/22 17:26	1

Client Sample ID: MW-2RD-CCR

Date Collected: 07/18/22 15:35
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-8

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37**		5.0		mg/L			07/28/22 21:53	5
Fluoride	<0.50		0.50		mg/L			07/28/22 21:53	5
Sulfate	**76**		5.0		mg/L			07/28/22 21:53	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:05	1
Arsenic	**0.0037**		0.0020		mg/L		07/26/22 08:45	08/04/22 02:05	1
Barium	**0.16**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:34	1
Boron	**0.16**		0.10		mg/L		07/26/22 08:45	08/05/22 20:03	1
Cadmium	**0.00015**		0.00010		mg/L		07/26/22 08:45	08/04/22 02:05	1
Calcium	**123**		0.50		mg/L		07/26/22 08:45	08/04/22 20:34	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:05	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:05	1
Lithium	**0.012**		0.010		mg/L		07/26/22 08:45	08/04/22 02:05	1
Molybdenum	**0.0038**		0.0020		mg/L		07/26/22 08:45	08/04/22 02:05	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 02:05	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 02:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**586**		50.0		mg/L			07/21/22 15:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			07/20/22 18:15	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.525**		0.183	0.189	1.00	0.190	pCi/L	07/22/22 10:57	08/15/22 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*75.8*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.631**		0.391	0.395	1.00	0.571	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*75.8*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*
Y Carrier	*87.5*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:55*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.16**		0.432	0.438	5.00	0.571	pCi/L		08/17/22 17:26	1

Client Sample ID: Field Blank 1-CCR

Date Collected: 07/19/22 11:00
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-9

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.5**		1.0		mg/L			07/28/22 22:08	1
Fluoride	<0.10		0.10		mg/L			07/28/22 22:08	1
Sulfate	<1.0		1.0		mg/L			07/28/22 22:08	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:09	1
Arsenic	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:09	1
Barium	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 20:37	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/05/22 20:06	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 02:09	1
Calcium	**0.62**		0.50		mg/L		07/26/22 08:45	08/04/22 20:37	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:09	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:09	1
Lithium	<0.010		0.010		mg/L		07/26/22 08:45	08/04/22 02:09	1
Molybdenum	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:09	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 02:09	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 02:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			07/20/22 17:57	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.141	U	0.0847	0.0849	1.00	0.141	pCi/L	07/22/22 10:57	08/15/22 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*77.8*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.563	U	0.345	0.347	1.00	0.563	pCi/L	07/22/22 11:55	08/10/22 13:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*77.8*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*
Y Carrier	*87.9*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<0.563	U	0.355	0.357	5.00	0.563	pCi/L		08/17/22 17:26	1

Client Sample ID: Dup-1-CCR

Date Collected: 07/19/22 00:00
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-10

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**26**		5.0		mg/L			07/28/22 22:22	5
Fluoride	<0.50		0.50		mg/L			07/28/22 22:22	5
Sulfate	**81**		5.0		mg/L			07/28/22 22:22	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:12	1
Arsenic	**0.0034**		0.0020		mg/L		07/26/22 08:45	08/04/22 02:12	1
Barium	**0.19**		0.0020		mg/L		07/26/22 08:45	08/04/22 20:55	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/05/22 20:09	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 02:12	1
Calcium	**116**		0.50		mg/L		07/26/22 08:45	08/04/22 20:55	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:12	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:12	1
Lithium	<0.010		0.010		mg/L		07/26/22 08:45	08/04/22 02:12	1
Molybdenum	**0.0036**		0.0020		mg/L		07/26/22 08:45	08/04/22 02:12	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 02:12	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 02:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**492**		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			07/20/22 18:05	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.539**		0.176	0.183	1.00	0.181	pCi/L	07/22/22 10:57	08/15/22 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*77.8*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.649**		0.378	0.383	1.00	0.540	pCi/L	07/22/22 11:55	08/10/22 13:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*77.8*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*
Y Carrier	*87.9*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.19**		0.417	0.424	5.00	0.540	pCi/L		08/17/22 17:26	1

Client Sample ID: Equipment Blank-CCR

Date Collected: 07/19/22 11:10
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-11

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.5**		1.0		mg/L			07/28/22 22:37	1
Fluoride	<0.10		0.10		mg/L			07/28/22 22:37	1
Sulfate	<1.0		1.0		mg/L			07/28/22 22:37	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:15	1
Arsenic	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:15	1
Barium	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 20:58	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/05/22 20:12	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 02:15	1
Calcium	**0.54**		0.50		mg/L		07/26/22 08:45	08/04/22 20:58	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:15	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 02:15	1
Lithium	<0.010		0.010		mg/L		07/26/22 08:45	08/04/22 02:15	1
Molybdenum	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 02:15	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 02:15	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 02:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			07/21/22 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			07/20/22 18:13	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.206	U	0.0964	0.0965	1.00	0.206	pCi/L	07/22/22 10:57	08/15/22 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*83.8*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.482	U	0.279	0.279	1.00	0.482	pCi/L	07/22/22 11:55	08/10/22 13:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*83.8*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*
Y Carrier	*89.3*		*40 - 110*	*07/22/22 11:55*	*08/10/22 13:56*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	<0.482	U	0.295	0.295	5.00	0.482	pCi/L		08/17/22 17:26	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-361235/3
Matrix: Water
Analysis Batch: 361235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			07/28/22 16:11	1
Fluoride	<0.10		0.10		mg/L			07/28/22 16:11	1
Sulfate	<1.0		1.0		mg/L			07/28/22 16:11	1

Lab Sample ID: LCS 310-361235/4
Matrix: Water
Analysis Batch: 361235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.73		mg/L		97	90 - 110
Fluoride	2.00	2.05		mg/L		102	90 - 110
Sulfate	10.0	10.1		mg/L		101	90 - 110

Lab Sample ID: 310-236217-6 MS
Matrix: Water
Analysis Batch: 361235

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	27	F1	25.0	49.3		mg/L		91	80 - 120
Fluoride	<0.50	F1	5.00	5.36		mg/L		102	80 - 120
Sulfate	83	F1	25.0	107		mg/L		93	80 - 120

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 361235

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	27	F1	25.0	49.1		mg/L		90	80 - 120	0	15
Fluoride	<0.50	F1	5.00	5.32		mg/L		101	80 - 120	1	15
Sulfate	83	F1	25.0	106		mg/L		93	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-360485/1-A
Matrix: Water
Analysis Batch: 361605

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360485

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 00:44	1
Arsenic	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 00:44	1
Barium	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 00:44	1
Boron	<0.10		0.10		mg/L		07/26/22 08:45	08/04/22 00:44	1
Cadmium	<0.00010		0.00010		mg/L		07/26/22 08:45	08/04/22 00:44	1
Calcium	<0.50		0.50		mg/L		07/26/22 08:45	08/04/22 00:44	1
Cobalt	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 00:44	1
Lead	<0.00050		0.00050		mg/L		07/26/22 08:45	08/04/22 00:44	1
Lithium	<0.010		0.010		mg/L		07/26/22 08:45	08/04/22 00:44	1
Molybdenum	<0.0020		0.0020		mg/L		07/26/22 08:45	08/04/22 00:44	1
Selenium	<0.0050		0.0050		mg/L		07/26/22 08:45	08/04/22 00:44	1
Thallium	<0.0010		0.0010		mg/L		07/26/22 08:45	08/04/22 00:44	1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: LCS 310-360485/2-A
Matrix: Water
Analysis Batch: 361605

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.192		mg/L		96	80 - 120
Arsenic	0.200	0.176		mg/L		88	80 - 120
Barium	0.100	0.0946		mg/L		95	80 - 120
Boron	0.200	0.176		mg/L		88	80 - 120
Cadmium	0.100	0.0941		mg/L		94	80 - 120
Calcium	2.00	1.71		mg/L		85	80 - 120
Cobalt	0.100	0.0886		mg/L		89	80 - 120
Lead	0.200	0.182		mg/L		91	80 - 120
Lithium	0.200	0.170		mg/L		85	80 - 120
Molybdenum	0.200	0.186		mg/L		93	80 - 120
Selenium	0.400	0.348		mg/L		87	80 - 120
Thallium	0.200	0.182		mg/L		91	80 - 120

Lab Sample ID: 310-236217-6 MS
Matrix: Water
Analysis Batch: 361734

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.0035		0.200	0.202		mg/L		99	75 - 125
Barium	0.18		0.100	0.293		mg/L		112	75 - 125
Cadmium	<0.00010		0.100	0.104		mg/L		104	75 - 125
Calcium	108		2.00	118.0	4	mg/L		482	75 - 125
Cobalt	<0.00050		0.100	0.0958		mg/L		96	75 - 125
Lithium	0.011		0.200	0.197		mg/L		93	75 - 125
Molybdenum	0.0037		0.200	0.214		mg/L		105	75 - 125
Selenium	<0.0050		0.400	0.398		mg/L		99	75 - 125

Lab Sample ID: 310-236217-6 MS
Matrix: Water
Analysis Batch: 361873

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.0020	F1	0.200	0.235		mg/L		117	75 - 125
Boron	<0.10	F2 F1	0.200	0.268		mg/L		105	75 - 125
Lead	<0.00050	F1	0.200	0.224		mg/L		112	75 - 125
Thallium	<0.0010	F1	0.200	0.248		mg/L		124	75 - 125

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 361734

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.0035		0.200	0.191		mg/L		94	75 - 125	6	20
Barium	0.18		0.100	0.287		mg/L		105	75 - 125	2	20
Cadmium	<0.00010		0.100	0.0992		mg/L		99	75 - 125	5	20
Calcium	108		2.00	115.0	4	mg/L		331	75 - 125	3	20
Cobalt	<0.00050		0.100	0.0886		mg/L		89	75 - 125	8	20
Lithium	0.011		0.200	0.189		mg/L		89	75 - 125	4	20
Molybdenum	0.0037		0.200	0.204		mg/L		100	75 - 125	5	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 361734

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Selenium	<0.0050		0.400	0.379		mg/L		95	75 - 125	5	20

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 361873

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 360485

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.0020	F1	0.200	0.216		mg/L		108	75 - 125	8	20
Boron	<0.10	F2 F1	0.200	0.231		mg/L		86	75 - 125	15	20
Lead	<0.00050	F1	0.200	0.204		mg/L		102	75 - 125	9	20
Thallium	<0.0010	F1	0.200	0.229		mg/L		114	75 - 125	8	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-360214/1
Matrix: Water
Analysis Batch: 360214

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			07/21/22 15:03	1

Lab Sample ID: LCS 310-360214/2
Matrix: Water
Analysis Batch: 360214

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	944.0		mg/L		94	90 - 110

Lab Sample ID: MB 310-360224/1
Matrix: Water
Analysis Batch: 360224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			07/21/22 15:48	1

Lab Sample ID: LCS 310-360224/2
Matrix: Water
Analysis Batch: 360224

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	940.0		mg/L		94	90 - 110

Lab Sample ID: 310-236217-6 DU
Matrix: Water
Analysis Batch: 360224

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	508		504.0		mg/L		0.8	20

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-360108/1
Matrix: Water
Analysis Batch: 360108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.0		SU		100	98 - 102

Lab Sample ID: LCS 310-360108/26
Matrix: Water
Analysis Batch: 360108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.1		SU		101	98 - 102

Lab Sample ID: 310-236217-4 DU
Matrix: Water
Analysis Batch: 360108

Client Sample ID: MW-3-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	6.6	HF	6.6		SU		0	20

Lab Sample ID: 310-236217-10 DU
Matrix: Water
Analysis Batch: 360108

Client Sample ID: Dup-1-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.2	HF	7.4		SU		3	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-574944/1-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 574944

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.117	U	0.0472	0.0472	1.00	0.117	pCi/L	07/22/22 10:57	08/15/22 09:28	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*86.0*		*40 - 110*	*07/22/22 10:57*	*08/15/22 09:28*	*1*

Lab Sample ID: LCS 160-574944/2-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 574944

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	11.3	10.54		1.14	1.00	0.112	pCi/L	93	75 - 125

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Barium	*90.8*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 310-236217-6 MS
Matrix: Water
Analysis Batch: 578009

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 574944

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	0.671		11.4	10.48		1.16	1.00	0.155	pCi/L	86	60 - 140

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Barium	*79.3*		*40 - 110*

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 578009

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 574944

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226	0.671		11.4	11.53		1.31	1.00	0.238	pCi/L	95	60 - 140	0.42	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Barium	*63.6*		*40 - 110*

Lab Sample ID: MB 160-574945/1-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 574945

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.0999	U	0.0498	0.0498	1.00	0.0999	pCi/L	07/22/22 11:06	08/15/22 09:23	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Barium	*86.8*		*40 - 110*	*07/22/22 11:06*	*08/15/22 09:23*	*1*

Lab Sample ID: LCS 160-574945/2-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 574945

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226			11.3	10.83		1.13	1.00	0.149	pCi/L	96	75 - 125

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Barium	*86.8*		*40 - 110*

Lab Sample ID: LCSD 160-574945/3-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 574945

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226			11.3	9.819		1.04	1.00	0.124	pCi/L	87	75 - 125	0.47	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-574945/3-A
Matrix: Water
Analysis Batch: 577998

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 574945

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Barium	88.5		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-574956/1-A
Matrix: Water
Analysis Batch: 576727

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 574956

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.474	U	0.270	0.270	1.00	0.474	pCi/L	07/22/22 11:53	08/05/22 10:57	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Barium	86.8		40 - 110	07/22/22 11:53	08/05/22 10:57	1
Y Carrier	83.4		40 - 110	07/22/22 11:53	08/05/22 10:57	1

Lab Sample ID: LCS 160-574956/2-A
Matrix: Water
Analysis Batch: 576727

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 574956

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.39	9.461		1.28	1.00	0.507	pCi/L	113	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Barium	86.8		40 - 110
Y Carrier	85.6		40 - 110

Lab Sample ID: LCSD 160-574956/3-A
Matrix: Water
Analysis Batch: 576727

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 574956

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228			8.39	9.870		1.32	1.00	0.519	pCi/L	118	75 - 125	0.16	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Barium	88.5		40 - 110
Y Carrier	85.6		40 - 110

Lab Sample ID: MB 160-574957/1-A
Matrix: Water
Analysis Batch: 577446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 574957

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.520	U	0.320	0.322	1.00	0.520	pCi/L	07/22/22 11:55	08/10/22 13:55	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-574957/1-A
Matrix: Water
Analysis Batch: 577446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 574957

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Barium	86.0		40 - 110	07/22/22 11:55	08/10/22 13:55	1
Y Carrier	87.1		40 - 110	07/22/22 11:55	08/10/22 13:55	1

Lab Sample ID: LCS 160-574957/2-A
Matrix: Water
Analysis Batch: 577446

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 574957

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.38	9.296		1.24	1.00	0.428	pCi/L	111	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Barium	90.8		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: 310-236217-6 MS
Matrix: Water
Analysis Batch: 577446

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 574957

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228	1.19		8.45	10.86		1.45	1.00	0.557	pCi/L	115	60 - 140		

Carrier	MS %Yield	MS Qualifier	Limits
Barium	79.3		40 - 110
Y Carrier	87.9		40 - 110

Lab Sample ID: 310-236217-6 MSD
Matrix: Water
Analysis Batch: 577446

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 574957

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228	1.19		8.42	9.868		1.45	1.00	0.677	pCi/L	103	60 - 140	0.34	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Barium	63.6		40 - 110
Y Carrier	88.2		40 - 110

HPLC/IC

Analysis Batch: 361235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	9056A	
310-236217-2	MW-1RD-CCR	Total/NA	Water	9056A	
310-236217-3	MW-2R-CCR	Total/NA	Water	9056A	
310-236217-4	MW-3-CCR	Total/NA	Water	9056A	
310-236217-5	MW-3R-CCR	Total/NA	Water	9056A	
310-236217-6	MW-3RD-CCR	Total/NA	Water	9056A	
310-236217-7	MW-4-CCR	Total/NA	Water	9056A	
310-236217-8	MW-2RD-CCR	Total/NA	Water	9056A	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	9056A	
310-236217-10	Dup-1-CCR	Total/NA	Water	9056A	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	9056A	
MB 310-361235/3	Method Blank	Total/NA	Water	9056A	
LCS 310-361235/4	Lab Control Sample	Total/NA	Water	9056A	
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	9056A	
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	9056A	

Metals

Prep Batch: 360485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	3005A	
310-236217-2	MW-1RD-CCR	Total/NA	Water	3005A	
310-236217-3	MW-2R-CCR	Total/NA	Water	3005A	
310-236217-4	MW-3-CCR	Total/NA	Water	3005A	
310-236217-5	MW-3R-CCR	Total/NA	Water	3005A	
310-236217-6	MW-3RD-CCR	Total/NA	Water	3005A	
310-236217-7	MW-4-CCR	Total/NA	Water	3005A	
310-236217-8	MW-2RD-CCR	Total/NA	Water	3005A	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	3005A	
310-236217-10	Dup-1-CCR	Total/NA	Water	3005A	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	3005A	
MB 310-360485/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-360485/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	3005A	
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	3005A	

Analysis Batch: 361605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	6020B	360485
310-236217-2	MW-1RD-CCR	Total/NA	Water	6020B	360485
310-236217-3	MW-2R-CCR	Total/NA	Water	6020B	360485
310-236217-4	MW-3-CCR	Total/NA	Water	6020B	360485
310-236217-5	MW-3R-CCR	Total/NA	Water	6020B	360485
310-236217-7	MW-4-CCR	Total/NA	Water	6020B	360485
310-236217-8	MW-2RD-CCR	Total/NA	Water	6020B	360485
310-236217-9	Field Blank 1-CCR	Total/NA	Water	6020B	360485
310-236217-10	Dup-1-CCR	Total/NA	Water	6020B	360485
310-236217-11	Equipment Blank-CCR	Total/NA	Water	6020B	360485
MB 310-360485/1-A	Method Blank	Total/NA	Water	6020B	360485
LCS 310-360485/2-A	Lab Control Sample	Total/NA	Water	6020B	360485

Metals

Analysis Batch: 361734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	6020B	360485
310-236217-2	MW-1RD-CCR	Total/NA	Water	6020B	360485
310-236217-3	MW-2R-CCR	Total/NA	Water	6020B	360485
310-236217-4	MW-3-CCR	Total/NA	Water	6020B	360485
310-236217-5	MW-3R-CCR	Total/NA	Water	6020B	360485
310-236217-6	MW-3RD-CCR	Total/NA	Water	6020B	360485
310-236217-7	MW-4-CCR	Total/NA	Water	6020B	360485
310-236217-8	MW-2RD-CCR	Total/NA	Water	6020B	360485
310-236217-9	Field Blank 1-CCR	Total/NA	Water	6020B	360485
310-236217-10	Dup-1-CCR	Total/NA	Water	6020B	360485
310-236217-11	Equipment Blank-CCR	Total/NA	Water	6020B	360485
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	6020B	360485
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	6020B	360485

Analysis Batch: 361873

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	6020B	360485
310-236217-2	MW-1RD-CCR	Total/NA	Water	6020B	360485
310-236217-3	MW-2R-CCR	Total/NA	Water	6020B	360485
310-236217-4	MW-3-CCR	Total/NA	Water	6020B	360485
310-236217-5	MW-3R-CCR	Total/NA	Water	6020B	360485
310-236217-6	MW-3RD-CCR	Total/NA	Water	6020B	360485
310-236217-7	MW-4-CCR	Total/NA	Water	6020B	360485
310-236217-8	MW-2RD-CCR	Total/NA	Water	6020B	360485
310-236217-9	Field Blank 1-CCR	Total/NA	Water	6020B	360485
310-236217-10	Dup-1-CCR	Total/NA	Water	6020B	360485
310-236217-11	Equipment Blank-CCR	Total/NA	Water	6020B	360485
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	6020B	360485
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	6020B	360485

General Chemistry

Analysis Batch: 360108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-2	MW-1RD-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-3	MW-2R-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-4	MW-3-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-5	MW-3R-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-6	MW-3RD-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-7	MW-4-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-8	MW-2RD-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-10	Dup-1-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	SM 4500 H+ B	
LCS 310-360108/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 310-360108/26	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-236217-4 DU	MW-3-CCR	Total/NA	Water	SM 4500 H+ B	
310-236217-10 DU	Dup-1-CCR	Total/NA	Water	SM 4500 H+ B	

General Chemistry

Analysis Batch: 360214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	SM 2540C	
310-236217-2	MW-1RD-CCR	Total/NA	Water	SM 2540C	
310-236217-3	MW-2R-CCR	Total/NA	Water	SM 2540C	
310-236217-8	MW-2RD-CCR	Total/NA	Water	SM 2540C	
MB 310-360214/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-360214/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 360224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-4	MW-3-CCR	Total/NA	Water	SM 2540C	
310-236217-5	MW-3R-CCR	Total/NA	Water	SM 2540C	
310-236217-6	MW-3RD-CCR	Total/NA	Water	SM 2540C	
310-236217-7	MW-4-CCR	Total/NA	Water	SM 2540C	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	SM 2540C	
310-236217-10	Dup-1-CCR	Total/NA	Water	SM 2540C	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	SM 2540C	
MB 310-360224/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-360224/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-236217-6 DU	MW-3RD-CCR	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 574944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-4	MW-3-CCR	Total/NA	Water	PrecSep-21	
310-236217-5	MW-3R-CCR	Total/NA	Water	PrecSep-21	
310-236217-6	MW-3RD-CCR	Total/NA	Water	PrecSep-21	
310-236217-7	MW-4-CCR	Total/NA	Water	PrecSep-21	
310-236217-8	MW-2RD-CCR	Total/NA	Water	PrecSep-21	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	PrecSep-21	
310-236217-10	Dup-1-CCR	Total/NA	Water	PrecSep-21	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	PrecSep-21	
MB 160-574944/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-574944/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	PrecSep-21	
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	PrecSep-21	

Prep Batch: 574945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	PrecSep-21	
310-236217-2	MW-1RD-CCR	Total/NA	Water	PrecSep-21	
310-236217-3	MW-2R-CCR	Total/NA	Water	PrecSep-21	
MB 160-574945/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-574945/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-574945/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 574956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-1	MW-1-CCR	Total/NA	Water	PrecSep_0	
310-236217-2	MW-1RD-CCR	Total/NA	Water	PrecSep_0	
310-236217-3	MW-2R-CCR	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 574956 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-574956/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-574956/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-574956/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 574957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-236217-4	MW-3-CCR	Total/NA	Water	PrecSep_0	
310-236217-5	MW-3R-CCR	Total/NA	Water	PrecSep_0	
310-236217-6	MW-3RD-CCR	Total/NA	Water	PrecSep_0	
310-236217-7	MW-4-CCR	Total/NA	Water	PrecSep_0	
310-236217-8	MW-2RD-CCR	Total/NA	Water	PrecSep_0	
310-236217-9	Field Blank 1-CCR	Total/NA	Water	PrecSep_0	
310-236217-10	Dup-1-CCR	Total/NA	Water	PrecSep_0	
310-236217-11	Equipment Blank-CCR	Total/NA	Water	PrecSep_0	
MB 160-574957/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-574957/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
310-236217-6 MS	MW-3RD-CCR	Total/NA	Water	PrecSep_0	
310-236217-6 MSD	MW-3RD-CCR	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Client Sample ID: MW-1-CCR
Date Collected: 07/18/22 13:30
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 19:17
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 19:48
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 01:23
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:21
Total/NA	Analysis	SM 2540C		1	360214	ENB7	EET CF	07/21/22 15:03
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:52
Total/NA	Prep	PrecSep-21			574945	MS	EET SL	07/22/22 11:06
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:25
Total/NA	Prep	PrecSep_0			574956	MS	EET SL	07/22/22 11:53
Total/NA	Analysis	9320		1	576727	JCB	EET SL	08/05/22 10:59
Total/NA	Analysis	Ra226_Ra228		1	578125	EMH	EET SL	08/15/22 22:37

Client Sample ID: MW-1RD-CCR
Date Collected: 07/18/22 14:15
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 19:31
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:06
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 01:26
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:24
Total/NA	Analysis	SM 2540C		1	360214	ENB7	EET CF	07/21/22 15:03
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:53
Total/NA	Prep	PrecSep-21			574945	MS	EET SL	07/22/22 11:06
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:25
Total/NA	Prep	PrecSep_0			574956	MS	EET SL	07/22/22 11:53
Total/NA	Analysis	9320		1	576727	JCB	EET SL	08/05/22 10:59
Total/NA	Analysis	Ra226_Ra228		1	578125	EMH	EET SL	08/15/22 22:37

Client Sample ID: MW-2R-CCR
Date Collected: 07/18/22 15:40
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 19:45
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:10

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Client Sample ID: MW-2R-CCR
Date Collected: 07/18/22 15:40
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 01:29
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:27
Total/NA	Analysis	SM 2540C		1	360214	ENB7	EET CF	07/21/22 15:03
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:59
Total/NA	Prep	PrecSep-21			574945	MS	EET SL	07/22/22 11:06
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:25
Total/NA	Prep	PrecSep_0			574956	MS	EET SL	07/22/22 11:53
Total/NA	Analysis	9320		1	576727	JCB	EET SL	08/05/22 10:59
Total/NA	Analysis	Ra226_Ra228		1	578125	EMH	EET SL	08/15/22 22:37

Client Sample ID: MW-3-CCR
Date Collected: 07/19/22 07:35
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 19:59
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:13
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 01:33
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:30
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:43
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:29
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:55
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: MW-3R-CCR
Date Collected: 07/19/22 08:15
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 20:13
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:17
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 01:36
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:33

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Client Sample ID: MW-3R-CCR
Date Collected: 07/19/22 08:15
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:49
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:29
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:55
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: MW-3RD-CCR
Date Collected: 07/19/22 09:25
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 20:27
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:20
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:37
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 18:14
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	577998	CLP	EET SL	08/15/22 09:29
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:55
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: MW-4-CCR
Date Collected: 07/19/22 10:50
Date Received: 07/20/22 14:20

Lab Sample ID: 310-236217-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 21:38
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:30
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 02:02
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 19:59
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 18:16
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	578009	JCB	EET SL	08/15/22 09:31
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:55

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Client Sample ID: MW-4-CCR

Lab Sample ID: 310-236217-7

Date Collected: 07/19/22 10:50

Matrix: Water

Date Received: 07/20/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: MW-2RD-CCR

Lab Sample ID: 310-236217-8

Date Collected: 07/18/22 15:35

Matrix: Water

Date Received: 07/20/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 21:53
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:34
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 02:05
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 20:03
Total/NA	Analysis	SM 2540C		1	360214	ENB7	EET CF	07/21/22 15:03
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 18:15
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	578009	JCB	EET SL	08/15/22 09:32
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:55
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: Field Blank 1-CCR

Lab Sample ID: 310-236217-9

Date Collected: 07/19/22 11:00

Matrix: Water

Date Received: 07/20/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	361235	DHM5	EET CF	07/28/22 22:08
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:37
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 02:09
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 20:06
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 17:57
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	578009	JCB	EET SL	08/15/22 09:32
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:56
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: Dup-1-CCR

Lab Sample ID: 310-236217-10

Date Collected: 07/19/22 00:00

Matrix: Water

Date Received: 07/20/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	361235	DHM5	EET CF	07/28/22 22:22
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:55
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 02:12
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 20:09
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 18:05
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	578009	JCB	EET SL	08/15/22 09:32
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:56
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Client Sample ID: Equipment Blank-CCR

Lab Sample ID: 310-236217-11

Date Collected: 07/19/22 11:10

Matrix: Water

Date Received: 07/20/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	361235	DHM5	EET CF	07/28/22 22:37
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361734	A6US	EET CF	08/04/22 20:58
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361605	A6US	EET CF	08/04/22 02:15
Total/NA	Prep	3005A			360485	DHM5	EET CF	07/26/22 08:45
Total/NA	Analysis	6020B		1	361873	A6US	EET CF	08/05/22 20:12
Total/NA	Analysis	SM 2540C		1	360224	ENB7	EET CF	07/21/22 15:48
Total/NA	Analysis	SM 4500 H+ B		1	360108	N7RT	EET CF	07/20/22 18:13
Total/NA	Prep	PrecSep-21			574944	MS	EET SL	07/22/22 10:57
Total/NA	Analysis	9315		1	578009	JCB	EET SL	08/15/22 09:32
Total/NA	Prep	PrecSep_0			574957	MS	EET SL	07/22/22 11:55
Total/NA	Analysis	9320		1	577446	FLC	EET SL	08/10/22 13:56
Total/NA	Analysis	Ra226_Ra228		1	578427	EMH	EET SL	08/17/22 17:26

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 310-236217-1
Project/Site: SKB Lansing CCR Monitoring

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	019-999-319	12-31-22

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-22
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	07-01-22 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-23
HI - RadChem Recognition	State	n/a	06-30-23
Illinois	NELAP	200023	11-30-22
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-22
Kentucky (DW)	State	KY90125	12-31-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-22
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-23
Louisiana (DW)	State	LA011	12-31-22
Maryland	State	310	09-30-23
MI - RadChem Recognition	State	9005	06-30-23
Missouri	State	780	06-30-25
Nevada	State	MO000542020-1	07-31-23
New Jersey	NELAP	MO002	06-30-23
New York	NELAP	11616	04-01-23
North Dakota	State	R-207	06-30-23
NRC	NRC	24-24817-01	12-31-22
Oklahoma	NELAP	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	02-28-23
South Carolina	State	85002001	06-30-22 *
Texas	NELAP	T104704193	07-31-23
US Fish & Wildlife	US Federal Programs	058448	07-31-23
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22 *
Virginia	NELAP	10310	06-14-23
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
SM 4500 H+ B	pH	SM	EET CF
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
3005A	Preparation, Total Metals	SW846	EET CF
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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310-236217 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: GES			
City/State: CITY: Eagan	STATE: MN	Project:	
Receipt Information			
Date/Time Received: DATE: 7-20-22	TIME: 1420	Received By: RR	

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☐ No	*If yes:* Cooler # 1 of 6
Cooler Custody Seals Present?	☑ Yes	☐ No	*If yes:* Cooler custody seals intact? ☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: P	Correction Factor (°C): 0
Uncorrected Temp (°C): -0.4	Corrected Temp (°C): -0.4

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GES

City/State: CITY Eagan | STATE MN | Project.

Receipt Information

Date/Time Received. | DATE 7-20-22 | TIME 1420 | Received By: RR

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 2 of 6

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☑ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: P | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): -1.4 | Corrected Temp (°C): -1.4

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

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Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GES

City/State: CITY Eagan | STATE MN | Project.

Receipt Information

Date/Time Received: DATE 7-20-22 | TIME 1420 | Received By: RL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 3 of 6

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☑ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: P | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): -1.5 | Corrected Temp (°C): -1.5

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GES

City/State. CITY: Eagan | STATE: MN | Project.

Receipt Information

Date/Time Received: DATE: 7-20-22 | TIME: 1420 | Received By: RL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 4 of 6

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☑ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: P | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): -0.9 | Corrected Temp (°C): -0.9

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GES

City/State: CITY Eagan | STATE MN | Project.

Receipt Information

Date/Time Received: DATE 7-20-22 | TIME 1420 | Received By: RL

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 5 of 6

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☑ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: P | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): -2.7 | Corrected Temp (°C): -2.7

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GES

City/State: CITY Eagan | STATE MN | Project.

Receipt Information

Date/Time Received: DATE 7 20 22 | TIME 1470 | Received By: AR

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 6 of 6

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☑ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: P | Correction Factor (°C): 0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): -0.8 | Corrected Temp (°C): -0.8

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

15

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

Eurofins Minneapolis SC 213

eurofins Environment Testing America

Client Information	Sampler: N-Schlagel	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-68661-19671 1
Client Contact: Mr Nicholas Schlagel	Phone: 651-792-6065	E-Mail: Zach Bindert@Eurofinset.com	State of Origin: MN	Page: Page 1 of 2
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested:			
City: Eagan	TAT Requested (days): Standard			
State, Zip: MN, 55121-1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline com	WO #:			
Project Name: SKB Lansing CCR Monitoring	Project #: 31013984			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226 - Radium 226	Ra226Ra228_GFPC - Local Method	9320_Ra228 - Radium 228	9056A_ORGFM_28D - Chloride, Fluoride, Sulfate	Total Metals - 6020B - (Sb,As,Ba, B,Cd,Ca,Co,Pb,Li,Mo,Se,Tl)	2540C_Calcd - TDS SM4500_H+ - pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	D	N	D	N		
MW-1 - CCR	7/18/22	13:30	6	Water			X	X	X	X	X	X	5	
MW-1RD - CCR	7/18/22	14:15	6	Water			X	X	X	X	X	X	5	
MW-2R - CCR	7/18/22	15:40	6	Water			X	X	X	X	X	X	5	
MW-3 - CCR	7/19/22	7:35	6	Water			X	X	X	X	X	X	5	
MW-3R - CCR	7/19/22	8:15	6	Water			X	X	X	X	X	X	5	
MW-3RD - CCR	7/19/22	9:25	6	Water		Y	X	X	X	X	X	X	5	
MW-4 - CCR	7/19/22	10:50	6	Water			X	X	X	X	X	X	5	
MW-2RD - CCR	7/18/22	15:35	6	Water			X	X	X	X	X	X	5	
Field Blank 1 - CCR	7/19/22	11:00	6	Water			X	X	X	X	X	X	5	
Duplicate 1 - CCR	7/19/22	—	6	Water			X	X	X	X	X	X	5	
Equipment Blank - CCR	7/19/22	11:10	6	Water			X	X	X	X	X	X	5	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date	Time	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	7/19/22 13:25	GES	[signature]	7-19-22 13:25	EUROFINS
2	[signature]	7-19-22 17:08	EUROFINS	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by: [signature]	Date/Time: 7/20/22 1420	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

8/18/2022

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-68661-19671 1
Client Contact: Mr Nicholas Schlagel	Phone:	E-Mail: Zach.Bindert@Eurofinset.com	State of Origin:	Page: Page 1 of 2
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested:			
City: Eagan	TAT Requested (days):			
State, Zip: MN, 55121-1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline.com	WO #:			
Project Name: SKB Lansing CCR Monitoring	Project #: 31013984			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226 - Radium 226	Ra226Ra228_GFPC - Local Method	9320_Ra228 - Radium 228	9056A_ORGFM_28D - Chloride, Fluoride, Sulfate	Total Metals - 6020B - (Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Pb,Li,Mo,Se,Tl) 7470A - Mecury	2540C_Calcd - TDS SM4500_H+ - pH								Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	D	N	D	N										
MW-1 - CCR				Water			X	X	X	X	X	X									5	
MW-1RD - CCR				Water			X	X	X	X	X	X									5	
MW-2R - CCR				Water			X	X	X	X	X	X									5	
MW-3 - CCR				Water			X	X	X	X	X	X									5	
MW-3R - CCR				Water			X	X	X	X	X	X									5	
MW-3RD - CCR				Water			X	X	X	X	X	X									5	
MW-4 - CCR				Water			X	X	X	X	X	X									5	
MW-2RD - CCR				Water			X	X	X	X	X	X									5	
Field Blank 1 - CCR				Water			X	X	X	X	X	X									5	
Duplicate 1 - CCR				Water			X	X	X	X	X	X									5	
Equipment Blank - CCR				Water			X	X	X	X	X	X									5	

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested I, II, III, IV Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 7/20/22 1420	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

8/18/2022

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-236217-1
SDG Number:

Login Number: 236217
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Tracer/Carrier Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing CCR Monitoring

Job ID: 310-236217-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
310-236217-1	MW-1-CCR	47.9
310-236217-2	MW-1RD-CCR	91.5
310-236217-3	MW-2R-CCR	91.5
310-236217-4	MW-3-CCR	68.1
310-236217-5	MW-3R-CCR	63.1
310-236217-6	MW-3RD-CCR	66.6
310-236217-6 MS	MW-3RD-CCR	79.3
310-236217-6 MSD	MW-3RD-CCR	63.6
310-236217-7	MW-4-CCR	91.8
310-236217-8	MW-2RD-CCR	75.8
310-236217-9	Field Blank 1-CCR	77.8
310-236217-10	Dup-1-CCR	77.8
310-236217-11	Equipment Blank-CCR	83.8
LCS 160-574944/2-A	Lab Control Sample	90.8
LCS 160-574945/2-A	Lab Control Sample	86.8
LCSD 160-574945/3-A	Lab Control Sample Dup	88.5
MB 160-574944/1-A	Method Blank	86.0
MB 160-574945/1-A	Method Blank	86.8

Tracer/Carrier Legend

Ba = Barium

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
310-236217-1	MW-1-CCR	47.9	88.6
310-236217-2	MW-1RD-CCR	91.5	84.1
310-236217-3	MW-2R-CCR	91.5	85.6
310-236217-4	MW-3-CCR	68.1	86.4
310-236217-5	MW-3R-CCR	63.1	86.7
310-236217-6	MW-3RD-CCR	66.6	89.3
310-236217-6 MS	MW-3RD-CCR	79.3	87.9
310-236217-6 MSD	MW-3RD-CCR	63.6	88.2
310-236217-7	MW-4-CCR	91.8	85.6
310-236217-8	MW-2RD-CCR	75.8	87.5
310-236217-9	Field Blank 1-CCR	77.8	87.9
310-236217-10	Dup-1-CCR	77.8	87.9
310-236217-11	Equipment Blank-CCR	83.8	89.3
LCS 160-574956/2-A	Lab Control Sample	86.8	85.6
LCS 160-574957/2-A	Lab Control Sample	90.8	87.1
LCSD 160-574956/3-A	Lab Control Sample Dup	88.5	85.6
MB 160-574956/1-A	Method Blank	86.8	83.4
MB 160-574957/1-A	Method Blank	86.0	87.1

Tracer/Carrier Legend

Ba = Barium
Y = Y Carrier

Appendix C – Statistical Evaluation Data

	Background Statistics for Data Sets with Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.11/5/2023 1:30:41 PM	
From File	ProUCL less outliers_2022.xls	
Full Precision	OFF	
Confidence Coefficient	95%	
Coverage	95%	
Different or Future K Observations	1	
Number of Bootstrap Operations	2000	

Antimony

General Statistics

Total Number of Observations	87	Number of Missing Observations	27
Number of Distinct Observations	5		
Number of Detects	2	Number of Non-Detects	85
Number of Distinct Detects	2	Number of Distinct Non-Detects	3
Minimum Detect	3.6000E-4	Minimum Non-Detect	0.001
Maximum Detect	0.0032	Maximum Non-Detect	0.02
Variance Detected	4.0328E-6	Percent Non-Detects	97.7%
Mean Detected	0.00178	SD Detected	0.00201
Mean of Detected Logged Data	-6.837	SD of Detected Logged Data	1.545

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Arsenic

General Statistics

Total Number of Observations	72	Number of Missing Observations	41
Number of Distinct Observations	26		
Number of Detects	49	Number of Non-Detects	23
Number of Distinct Detects	26	Number of Distinct Non-Detects	2
Minimum Detect	0.001	Minimum Non-Detect	0.001
Maximum Detect	0.0049	Maximum Non-Detect	0.002
Variance Detected	1.0696E-6	Percent Non-Detects	31.94%
Mean Detected	0.00255	SD Detected	0.00103
Mean of Detected Logged Data	-6.051	SD of Detected Logged Data	0.41

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.98	d2max (for USL)	3.094

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.593	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.102	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.127	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	6.342	k star (bias corrected MLE)	5.968
Theta hat (MLE)	4.0255E-4	Theta star (bias corrected MLE)	4.2782E-4
nu hat (MLE)	621.5	nu star (bias corrected)	584.8
MLE Mean (bias corrected)	0.00255		

55				MLE Sd (bias corrected)	0.00105				95% Percentile of Chisquare (2kstar)			20.94
56												
57					**Gamma ROS Statistics using Imputed Non-Detects**							
58					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
59					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
60					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
61					This is especially true when the sample size is small.							
62					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
63				Minimum	0.001				Mean			0.00493
64				Maximum	0.01				Median			0.0033
65				SD	0.0036				CV			0.73
66				k hat (MLE)	1.953				k star (bias corrected MLE)			1.881
67				Theta hat (MLE)	0.00253				Theta star (bias corrected MLE)			0.00262
68				nu hat (MLE)	281.2				nu star (bias corrected)			270.8
69				MLE Mean (bias corrected)	0.00493				MLE Sd (bias corrected)			0.0036
70				95% Percentile of Chisquare (2kstar)	9.099				90% Percentile			0.00973
71				95% Percentile	0.0119				99% Percentile			0.0168
72					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
73					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
74					WH	HW					WH	HW
75				95% Approx. Gamma UTL with 95% Coverage	0.0141	0.0145			95% Approx. Gamma UPL		0.012	0.0122
76				95% Gamma USL	0.0236	0.0259						
77												
78	**Barium**											
79												
80	**General Statistics**											
81				Total Number of Observations	75				Number of Distinct Observations			27
82									Number of Missing Observations			38
83				Minimum	0.063				First Quartile			0.165
84				Second Largest	0.6				Median			0.2
85				Maximum	0.6				Third Quartile			0.24
86				Mean	0.24				SD			0.133
87				Coefficient of Variation	0.554				Skewness			1.733
88				Mean of logged Data	-1.547				SD of logged Data			0.474
89												
90					**Critical Values for Background Threshold Values (BTVs)**							
91				Tolerance Factor K (For UTL)	1.972				d2max (for USL)			3.109
92												
93					**Nonparametric Distribution Free Background Statistics**							
94					**Data do not follow a Discernible Distribution (0.05)**							
95												
96					**Nonparametric Upper Limits for Background Threshold Values**							
97				Order of Statistic, r	74				95% UTL with 95% Coverage			0.6
98				Approx, f used to compute achieved CC	1.947				Approximate Actual Confidence Coefficient achieved by UTL			0.894
99									Approximate Sample Size needed to achieve specified CC			93
100				95% Percentile Bootstrap UTL with 95% Coverage	0.6				95% BCA Bootstrap UTL with 95% Coverage			0.573
101				95% UPL	0.572				90% Percentile			0.54
102				90% Chebyshev UPL	0.641				95% Percentile			0.57
103				95% Chebyshev UPL	0.822				99% Percentile			0.6
104				95% USL	0.6							
105												
106												
107	**Beryllium**											
108												
109					**General Statistics**							
110				Total Number of Observations	81				Number of Missing Observations			33
111				Number of Distinct Observations	6							
112				Number of Detects	3				Number of Non-Detects			78
113				Number of Distinct Detects	3				Number of Distinct Non-Detects			3

114				Minimum Detect	4.1000E-5					Minimum Non-Detect	7.0000E-4	
115				Maximum Detect	1.6000E-4					Maximum Non-Detect	0.002	
116				Variance Detected	3.5770E-9					Percent Non-Detects	96.3%	
117				Mean Detected	9.7000E-5					SD Detected	5.9808E-5	
118				Mean of Detected Logged Data	-9.386					SD of Detected Logged Data	0.684	
119												
120	**Warning: Data set has only 3 Detected Values.**											
121	**This is not enough to compute meaningful or reliable statistics and estimates.**											
122												
123												
124	**Critical Values for Background Threshold Values (BTVs)**											
125				Tolerance Factor K (For UTL)	1.958					d2max (for USL)	3.136	
126												
127												
128	**Cadmium**											
129												
130	**General Statistics**											
131				Total Number of Observations	65					Number of Missing Observations	48	
132				Number of Distinct Observations	10							
133				Number of Detects	10					Number of Non-Detects	55	
134				Number of Distinct Detects	8					Number of Distinct Non-Detects	2	
135				Minimum Detect	1.3000E-4					Minimum Non-Detect	1.0000E-4	
136				Maximum Detect	0.0087					Maximum Non-Detect	5.0000E-4	
137				Variance Detected	6.6930E-6					Percent Non-Detects	84.62%	
138				Mean Detected	0.00145					SD Detected	0.00259	
139				Mean of Detected Logged Data	-7.385					SD of Detected Logged Data	1.28	
140												
141	**Critical Values for Background Threshold Values (BTVs)**											
142				Tolerance Factor K (For UTL)	2					d2max (for USL)	3.057	
143												
144	**Gamma GOF Tests on Detected Observations Only**											
145				A-D Test Statistic	0.809	**Anderson-Darling GOF Test**						
146				5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level						
147				K-S Test Statistic	0.255	**Kolmogorov-Smirnov GOF**						
148				5% K-S Critical Value	0.277	Detected data appear Gamma Distributed at 5% Significance Level						
149	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
150												
151	**Gamma Statistics on Detected Data Only**											
152				k hat (MLE)	0.712					k star (bias corrected MLE)	0.565	
153				Theta hat (MLE)	0.00203					Theta star (bias corrected MLE)	0.00256	
154				nu hat (MLE)	14.24					nu star (bias corrected)	11.3	
155				MLE Mean (bias corrected)	0.00145							
156				MLE Sd (bias corrected)	0.00192					95% Percentile of Chisquare (2kstar)	4.156	
157												
158	**Gamma ROS Statistics using Imputed Non-Detects**											
159				Minimum	1.3000E-4					Mean	0.00868	
160				Maximum	0.01					Median	0.01	
161				SD	0.00326					CV	0.375	
162				k hat (MLE)	1.894					k star (bias corrected MLE)	1.817	
163				Theta hat (MLE)	0.00458					Theta star (bias corrected MLE)	0.00478	
164				nu hat (MLE)	246.3					nu star (bias corrected)	236.2	
165				MLE Mean (bias corrected)	0.00868					MLE Sd (bias corrected)	0.00644	
166				95% Percentile of Chisquare (2kstar)	8.889					90% Percentile	0.0173	
167				95% Percentile	0.0212					99% Percentile	0.0301	
168	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
169	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
170					WH	HW					WH	HW

171	95% Approx. Gamma UTL with 95% Coverage				0.0249	0.0285	95% Approx. Gamma UPL				0.0212	0.0237
172				95% Gamma USL	0.0401	0.0502						
173												
174												
175	**Chromium (total)**											
176												
177	**General Statistics**											
178	Total Number of Observations				64		Number of Missing Observations				49	
179	Number of Distinct Observations				2							
180	Number of Detects				1		Number of Non-Detects				63	
181	Number of Distinct Detects				1		Number of Distinct Non-Detects				2	
182	Minimum Detect				0.004		Minimum Non-Detect				0.004	
183	Maximum Detect				0.004		Maximum Non-Detect				0.005	
184	Variance Detected				N/A		Percent Non-Detects				98.44%	
185	Mean Detected				0.004		SD Detected				N/A	
186	Mean of Detected Logged Data				-5.521		SD of Detected Logged Data				N/A	
187												
188	**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!**											
189	**It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**											
190												
191	**The data set for variable Chromium (total) was not processed!**											
192												
193												
194	**Cobalt**											
195												
196	**General Statistics**											
197	Total Number of Observations				96		Number of Missing Observations				18	
198	Number of Distinct Observations				59							
199	Number of Detects				78		Number of Non-Detects				18	
200	Number of Distinct Detects				57		Number of Distinct Non-Detects				3	
201	Minimum Detect				3.0000E-4		Minimum Non-Detect				3.0000E-4	
202	Maximum Detect				0.0081		Maximum Non-Detect				0.004	
203	Variance Detected				3.4910E-6		Percent Non-Detects				18.75%	
204	Mean Detected				0.00187		SD Detected				0.00187	
205	Mean of Detected Logged Data				-6.681		SD of Detected Logged Data				0.87	
206												
207	**Critical Values for Background Threshold Values (BTVs)**											
208	Tolerance Factor K (For UTL)				1.93		d2max (for USL)				3.196	
209												
210	**Nonparametric Distribution Free Background Statistics**											
211	**Data do not follow a Discernible Distribution (0.05)**											
212												
213	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
214	Order of Statistic, r				94		95% UTL with95% Coverage				0.0069	
215	Approx, f used to compute achieved CC				1.649		Approximate Actual Confidence Coefficient achieved by UTL				0.864	
216	Approximate Sample Size needed to achieve specified CC				124		95% UPL				0.00552	
217	95% USL				0.0081		95% KM Chebyshev UPL				0.00936	
218												
219	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
220	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
221	and consists of observations collected from clean unimpacted locations.											
222	The use of USL tends to provide a balance between false positives and false negatives provided the data											
223	represents a background data set and when many onsite observations need to be compared with the BTV.											
224												

Lead

General Statistics

Total Number of Observations	63	Number of Missing Observations	50
Number of Distinct Observations	8		
Number of Detects	5	Number of Non-Detects	58
Number of Distinct Detects	5	Number of Distinct Non-Detects	3
Minimum Detect	0.0019	Minimum Non-Detect	5.0000E-4
Maximum Detect	0.018	Maximum Non-Detect	0.05
Variance Detected	4.1002E-5	Percent Non-Detects	92.06%
Mean Detected	0.012	SD Detected	0.0064
Mean of Detected Logged Data	-4.658	SD of Detected Logged Data	0.924

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.007	d2max (for USL)	3.045

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.604	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.684	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.338	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.36	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.293	k star (bias corrected MLE)	1.051
Theta hat (MLE)	0.00522	Theta star (bias corrected MLE)	0.0114
nu hat (MLE)	22.93	nu star (bias corrected)	10.51
MLE Mean (bias corrected)	0.012		
MLE Sd (bias corrected)	0.0117	95% Percentile of Chisquare (2kstar)	6.186

Gamma ROS Statistics using Imputed Non-Detects

Minimum	0.0019	Mean	0.0102
Maximum	0.018	Median	0.01
SD	0.00171	CV	0.169
k hat (MLE)	25.43	k star (bias corrected MLE)	24.23
Theta hat (MLE)	3.9947E-4	Theta star (bias corrected MLE)	4.1926E-4
nu hat (MLE)	3204	nu star (bias corrected)	3053
MLE Mean (bias corrected)	0.0102	MLE Sd (bias corrected)	0.00206
95% Percentile of Chisquare (2kstar)	65.7	90% Percentile	0.0129
95% Percentile	0.0138	99% Percentile	0.0156

The following statistics are computed using Gamma ROS Statistics on Imputed Data

Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods

	WH	HW		WH	HW
95% Approx. Gamma UTL with 95% Coverage	0.0146	0.0148	95% Approx. Gamma UPL	0.0138	0.014
95% Gamma USL	0.0174	0.0179			

	Background Statistics for Data Sets with Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.11/5/2023 1:35:33 PM	
From File	ProUCL less outliers_2022.xls	
Full Precision	OFF	
Confidence Coefficient	95%	
Coverage	95%	
Different or Future K Observations	1	
Number of Bootstrap Operations	2000	

Mercury

General Statistics

Total Number of Observations	64	Number of Missing Observations	49
Number of Distinct Observations	1		
Number of Detects	0	Number of Non-Detects	64
Number of Distinct Detects	0	Number of Distinct Non-Detects	1
Minimum Detect	N/A	Minimum Non-Detect	2.0000E-4
Maximum Detect	N/A	Maximum Non-Detect	2.0000E-4
Variance Detected	N/A	Percent Non-Detects	100%
Mean Detected	N/A	SD Detected	N/A
Mean of Detected Logged Data	N/A	SD of Detected Logged Data	N/A

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Mercury was not processed!

Molybdenum

General Statistics

Total Number of Observations	95	Number of Missing Observations	19
Number of Distinct Observations	38		
Number of Detects	75	Number of Non-Detects	20
Number of Distinct Detects	36	Number of Distinct Non-Detects	3
Minimum Detect	0.0011	Minimum Non-Detect	0.001
Maximum Detect	0.0083	Maximum Non-Detect	0.01
Variance Detected	2.6272E-6	Percent Non-Detects	21.05%
Mean Detected	0.0031	SD Detected	0.00162
Mean of Detected Logged Data	-5.893	SD of Detected Logged Data	0.476

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.932	d2max (for USL)	3.192

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.221	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.755	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.103	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.103	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

55	**Gamma Statistics on Detected Data Only**											
56					k hat (MLE)	4.447			k star (bias corrected MLE)	4.278		
57					Theta hat (MLE)	6.9675E-4			Theta star (bias corrected MLE)	7.2427E-4		
58					nu hat (MLE)	667.1			nu star (bias corrected)	641.7		
59					MLE Mean (bias corrected)	0.0031						
60					MLE Sd (bias corrected)	0.0015			95% Percentile of Chisquare (2kstar)	16.3		
61												
62	**Gamma ROS Statistics using Imputed Non-Detects**											
63					Minimum	0.0011			Mean	0.00455		
64					Maximum	0.01			Median	0.0031		
65					SD	0.00317			CV	0.697		
66					k hat (MLE)	2.328			k star (bias corrected MLE)	2.261		
67					Theta hat (MLE)	0.00196			Theta star (bias corrected MLE)	0.00201		
68					nu hat (MLE)	442.3			nu star (bias corrected)	429.6		
69					MLE Mean (bias corrected)	0.00455			MLE Sd (bias corrected)	0.00303		
70					95% Percentile of Chisquare (2kstar)	10.32			90% Percentile	0.0086		
71					95% Percentile	0.0104			99% Percentile	0.0143		
72	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
73	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
74						WH	HW			WH	HW	
75					95% Approx. Gamma UTL with 95% Coverage	0.0118	0.0121		95% Approx. Gamma UPL	0.0104	0.0106	
76					95% Gamma USL	0.0205	0.0222					
77												
78	**Estimates of Gamma Parameters using KM Estimates**											
79					Mean (KM)	0.00282			SD (KM)	0.00165		
80					Variance (KM)	2.7303E-6			SE of Mean (KM)	1.7846E-4		
81					k hat (KM)	2.91			k star (KM)	2.826		
82					nu hat (KM)	553			nu star (KM)	536.8		
83					theta hat (KM)	9.6857E-4			theta star (KM)	9.9767E-4		
84					80% gamma percentile (KM)	0.00405			90% gamma percentile (KM)	0.00507		
85					95% gamma percentile (KM)	0.00602			99% gamma percentile (KM)	0.00809		
86												
87	**The following statistics are computed using gamma distribution and KM estimates**											
88	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
89						WH	HW			WH	HW	
90					95% Approx. Gamma UTL with 95% Coverage	0.00642	0.00653		95% Approx. Gamma UPL	0.00575	0.00581	
91					95% KM Gamma Percentile	0.00569	0.00575		95% Gamma USL	0.0104	0.011	
92												
93												
94	**Selenium**											
95												
96	**General Statistics**											
97					Total Number of Observations	96			Number of Missing Observations	18		
98					Number of Distinct Observations	12						
99					Number of Detects	13			Number of Non-Detects	83		
100					Number of Distinct Detects	9			Number of Distinct Non-Detects	3		
101					Minimum Detect	0.0011			Minimum Non-Detect	0.001		
102					Maximum Detect	0.034			Maximum Non-Detect	0.025		
103					Variance Detected	9.2367E-5			Percent Non-Detects	86.46%		
104					Mean Detected	0.00652			SD Detected	0.00961		
105					Mean of Detected Logged Data	-5.806			SD of Detected Logged Data	1.213		
106												
107	**Critical Values for Background Threshold Values (BTVs)**											
108					Tolerance Factor K (For UTL)	1.93			d2max (for USL)	3.196		

109												
110	**Nonparametric Distribution Free Background Statistics**											
111	**Data do not follow a Discernible Distribution (0.05)**											
112												
113	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
114						Order of Statistic, r	94			95% UTL with95% Coverage	0.025	
115						Approx, f used to compute achieved CC	1.649			Approximate Actual Confidence Coefficient achieved by UTL	0.864	
116						Approximate Sample Size needed to achieve specified CC	124			95% UPL	0.025	
117						95% USL	0.034			95% KM Chebyshev UPL	0.019	
118												
119	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
120	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
121	and consists of observations collected from clean unimpacted locations.											
122	The use of USL tends to provide a balance between false positives and false negatives provided the data											
123	represents a background data set and when many onsite observations need to be compared with the BTV.											
124												
125	**Thallium**											
126												
127	**General Statistics**											
128						Total Number of Observations	87			Number of Missing Observations	27	
129						Number of Distinct Observations	6					
130						Number of Detects	3			Number of Non-Detects	84	
131						Number of Distinct Detects	3			Number of Distinct Non-Detects	3	
132						Minimum Detect	5.6000E-5			Minimum Non-Detect	2.0000E-4	
133						Maximum Detect	0.0034			Maximum Non-Detect	0.02	
134						Variance Detected	3.7252E-6			Percent Non-Detects	96.55%	
135						Mean Detected	0.00117			SD Detected	0.00193	
136						Mean of Detected Logged Data	-8.41			SD of Detected Logged Data	2.361	
137												
138	**Warning: Data set has only 3 Detected Values.**											
139	**This is not enough to compute meaningful or reliable statistics and estimates.**											
140												
141												
142	**Critical Values for Background Threshold Values (BTVs)**											
143						Tolerance Factor K (For UTL)	1.946			d2max (for USL)	3.161	
144												
145	**Normal GOF Test on Detects Only**											
146						Shapiro Wilk Test Statistic	0.75			**Shapiro Wilk GOF Test**		
147						5% Shapiro Wilk Critical Value	0.767			Data Not Normal at 5% Significance Level		
148						Lilliefors Test Statistic	0.385			**Lilliefors GOF Test**		
149						5% Lilliefors Critical Value	0.425			Detected Data appear Normal at 5% Significance Level		
150	**Detected Data appear Approximate Normal at 5% Significance Level**											
151												
152	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
153						KM Mean	9.9316E-5			KM SD	3.7373E-4	
154						95% UTL95% Coverage	8.2658E-4			95% KM UPL (t)	7.2430E-4	
155						90% KM Percentile (z)	5.7827E-4			95% KM Percentile (z)	7.1405E-4	
156						99% KM Percentile (z)	9.6874E-4			95% KM USL	0.00128	
157												
158	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
159						Mean	0.00107			SD	0.00288	
160						95% UTL95% Coverage	0.00668			95% UPL (t)	0.00589	
161						90% Percentile (z)	0.00477			95% Percentile (z)	0.00581	
162						99% Percentile (z)	0.00777			95% USL	0.0102	

163												
164	**Calcium**											
165												
166	**General Statistics**											
167					Total Number of Observations	101				Number of Distinct Observations	75	
168										Number of Missing Observations	13	
169					Minimum	56.7				First Quartile	122	
170					Second Largest	241				Median	142	
171					Maximum	242				Third Quartile	206	
172					Mean	157				SD	52.99	
173					Coefficient of Variation	0.337				Skewness	-0.136	
174					Mean of logged Data	4.991				SD of logged Data	0.38	
175												
176					**Critical Values for Background Threshold Values (BTVs)**							
177					Tolerance Factor K (For UTL)	1.922				d2max (for USL)	3.213	
178												
179												
180					**Nonparametric Distribution Free Background Statistics**							
181					**Data do not follow a Discernible Distribution (0.05)**							
182												
183					**Nonparametric Upper Limits for Background Threshold Values**							
184					Order of Statistic, r	99				95% UTL with 95% Coverage	239	
185					Approx, f used to compute achieved CC	1.737				Approximate Actual Confidence Coefficient achieved by UTL	0.886	
186										Approximate Sample Size needed to achieve specified CC	124	
187					95% Percentile Bootstrap UTL with 95% Coverage	239				95% BCA Bootstrap UTL with 95% Coverage	228	
188					95% UPL	227.9				90% Percentile	223	
189					90% Chebyshev UPL	316.8				95% Percentile	227	
190					95% Chebyshev UPL	389.2				99% Percentile	241	
191					95% USL	242						
192												
193	**Chloride**											
194												
195	**General Statistics**											
196					Total Number of Observations	63				Number of Distinct Observations	53	
197										Number of Missing Observations	8	
198					Minimum	15.4				First Quartile	21.5	
199					Second Largest	95				Median	27.7	
200					Maximum	97.2				Third Quartile	37.8	
201					Mean	33.04				SD	17.76	
202					Coefficient of Variation	0.537				Skewness	2.091	
203					Mean of logged Data	3.394				SD of logged Data	0.432	
204												
205					**Critical Values for Background Threshold Values (BTVs)**							
206					Tolerance Factor K (For UTL)	2.007				d2max (for USL)	3.045	
207												
208					**Lognormal GOF Test**							
209					Shapiro Wilk Test Statistic	0.924				**Shapiro Wilk Lognormal GOF Test**		
210					5% Shapiro Wilk P Value	6.7640E-4				Data Not Lognormal at 5% Significance Level		
211					Lilliefors Test Statistic	0.102				**Lilliefors Lognormal GOF Test**		
212					5% Lilliefors Critical Value	0.111				Data appear Lognormal at 5% Significance Level		
213					**Data appear Approximate Lognormal at 5% Significance Level**							
214												
215					**Background Statistics assuming Lognormal Distribution**							
216					95% UTL with 95% Coverage	70.91				90% Percentile (z)	51.83	

217					95% UPL (t)	61.66				95% Percentile (z)		60.65
218					95% USL	111.1				99% Percentile (z)		81.43
219												
220	**Fluoride**											
221												
222						**General Statistics**						
223					Total Number of Observations	106				Number of Missing Observations		8
224					Number of Distinct Observations	17						
225					Number of Detects	30				Number of Non-Detects		76
226					Number of Distinct Detects	16				Number of Distinct Non-Detects		2
227					Minimum Detect	0.087				Minimum Non-Detect		0.25
228					Maximum Detect	0.33				Maximum Non-Detect		0.5
229					Variance Detected	0.00331				Percent Non-Detects		71.7%
230					Mean Detected	0.215				SD Detected		0.0575
231					Mean of Detected Logged Data	-1.576				SD of Detected Logged Data		0.309
232												
233						**Critical Values for Background Threshold Values (BTVs)**							
234					Tolerance Factor K (For UTL)	1.915				d2max (for USL)		3.229
235												
236						**Normal GOF Test on Detects Only**							
237					Shapiro Wilk Test Statistic	0.975				**Shapiro Wilk GOF Test**		
238					5% Shapiro Wilk Critical Value	0.927				Detected Data appear Normal at 5% Significance Level		
239					Lilliefors Test Statistic	0.0999				**Lilliefors GOF Test**		
240					5% Lilliefors Critical Value	0.159				Detected Data appear Normal at 5% Significance Level		
241						**Detected Data appear Normal at 5% Significance Level**						
242												
243						**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**						
244					KM Mean	0.193				KM SD		0.0494
245					95% UTL95% Coverage	0.287				95% KM UPL (t)		0.275
246					90% KM Percentile (z)	0.256				95% KM Percentile (z)		0.274
247					99% KM Percentile (z)	0.308				95% KM USL		0.352
248												
249	**Lithium**											
250												
251						**General Statistics**						
252					Total Number of Observations	96				Number of Missing Observations		16
253					Number of Distinct Observations	11						
254					Number of Detects	10				Number of Non-Detects		86
255					Number of Distinct Detects	9				Number of Distinct Non-Detects		2
256					Minimum Detect	0.011				Minimum Non-Detect		0.01
257					Maximum Detect	0.046				Maximum Non-Detect		0.03
258					Variance Detected	1.5566E-4				Percent Non-Detects		89.58%
259					Mean Detected	0.0209				SD Detected		0.0125
260					Mean of Detected Logged Data	-3.997				SD of Detected Logged Data		0.508
261												
262						**Critical Values for Background Threshold Values (BTVs)**							
263					Tolerance Factor K (For UTL)	1.93				d2max (for USL)		3.196
264												
265												
266						**Gamma GOF Tests on Detected Observations Only**							
267					A-D Test Statistic	0.716				**Anderson-Darling GOF Test**		
268					5% A-D Critical Value	0.729				Detected data appear Gamma Distributed at 5% Significance Level		
269					K-S Test Statistic	0.208				**Kolmogorov-Smirnov GOF**		
270					5% K-S Critical Value	0.268				Detected data appear Gamma Distributed at 5% Significance Level		

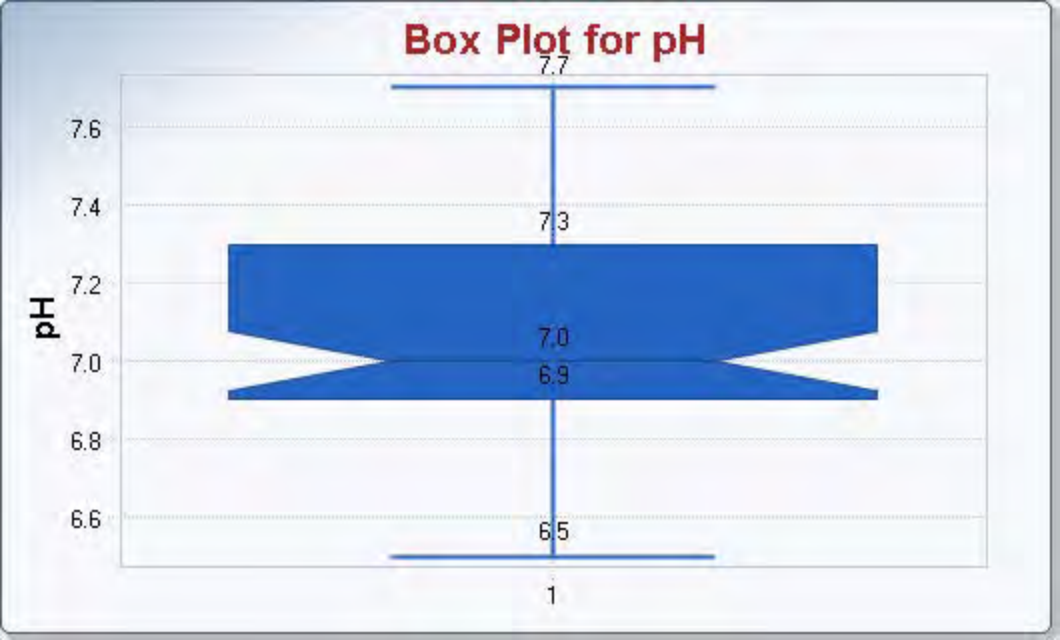
	A	B	C	D	E	F	G	H	I	J	K	L
271	**Detected data appear Gamma Distributed at 5% Significance Level**											
272												
273	**Gamma Statistics on Detected Data Only**											
274					k hat (MLE)	4.022			k star (bias corrected MLE)			2.882
275					Theta hat (MLE)	0.0052			Theta star (bias corrected MLE)			0.00725
276					nu hat (MLE)	80.45			nu star (bias corrected)			57.65
277					MLE Mean (bias corrected)	0.0209						
278					MLE Sd (bias corrected)	0.0123			95% Percentile of Chisquare (2kstar)			12.24
279												
280	**Gamma ROS Statistics using Imputed Non-Detects**											
281					Minimum	0.01			Mean			0.0156
282					Maximum	0.046			Median			0.0128
283					SD	0.0073			CV			0.467
284					k hat (MLE)	6.066			k star (bias corrected MLE)			5.883
285					Theta hat (MLE)	0.00258			Theta star (bias corrected MLE)			0.00266
286					nu hat (MLE)	1165			nu star (bias corrected)			1130
287					MLE Mean (bias corrected)	0.0156			MLE Sd (bias corrected)			0.00644
288					95% Percentile of Chisquare (2kstar)	20.71			90% Percentile			0.0242
289					95% Percentile	0.0275			99% Percentile			0.0344
290	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
291	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
292						WH	HW				WH	HW
293				95% Approx. Gamma UTL with 95% Coverage		0.03	0.0301		95% Approx. Gamma UPL		0.0275	0.0275
294					95% Gamma USL	0.0443	0.0455					
295												
296												

1				**Background Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.11/5/2023 1:38:57 PM								
4			From File	ProUCL less outliers_2022.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			Different or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**Radium (226)**											
12												
13						**General Statistics**						
14					Total Number of Observations	89			Number of Missing Observations	15		
15					Number of Distinct Observations	82						
16					Number of Detects	73			Number of Non-Detects	16		
17					Number of Distinct Detects	69			Number of Distinct Non-Detects	15		
18					Minimum Detect	0.101			Minimum Non-Detect	0.0816		
19					Maximum Detect	0.78			Maximum Non-Detect	0.461		
20					Variance Detected	0.0296			Percent Non-Detects	17.98%		
21					Mean Detected	0.428			SD Detected	0.172		
22					Mean of Detected Logged Data	-0.936			SD of Detected Logged Data	0.442		
23												
24						**Critical Values for Background Threshold Values (BTVs)**							
25					Tolerance Factor K (For UTL)	1.942			d2max (for USL)	3.169		
26												
27												
28						**Lognormal GOF Test on Detected Observations Only**							
29					Shapiro Wilk Approximate Test Statistic	0.959			**Shapiro Wilk GOF Test**			
30					5% Shapiro Wilk P Value	0.054			Detected Data appear Lognormal at 5% Significance Level			
31					Lilliefors Test Statistic	0.0742			**Lilliefors GOF Test**			
32					5% Lilliefors Critical Value	0.104			Detected Data appear Lognormal at 5% Significance Level			
33						**Detected Data appear Lognormal at 5% Significance Level**						
34												
35						**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**						
36					Mean in Original Scale	0.387			Mean in Log Scale	-1.065		
37					SD in Original Scale	0.181			SD in Log Scale	0.498		
38					95% UTL95% Coverage	0.907			95% BCA UTL95% Coverage	0.77		
39					95% Bootstrap (%) UTL95% Coverage	0.77			95% UPL (t)	0.792		
40					90% Percentile (z)	0.652			95% Percentile (z)	0.782		
41					99% Percentile (z)	1.098			95% USL	1.671		
42												
43						**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**						
44					KM Mean of Logged Data	-1.121			95% KM UTL (Lognormal)95% Coverage	1.058		
45					KM SD of Logged Data	0.606			95% KM UPL (Lognormal)	0.898		
46					95% KM Percentile Lognormal (z)	0.884			95% KM USL (Lognormal)	2.227		
47												
48												
49												
50	**Radium 228**											
51												
52						**General Statistics**						
53					Total Number of Observations	88			Number of Missing Observations	16		
54					Number of Distinct Observations	83						

55				Number of Detects	65					Number of Non-Detects	23	
56				Number of Distinct Detects	63					Number of Distinct Non-Detects	22	
57				Minimum Detect	0.346					Minimum Non-Detect	0.297	
58				Maximum Detect	1.58					Maximum Non-Detect	1.08	
59				Variance Detected	0.0786					Percent Non-Detects	26.14%	
60				Mean Detected	0.757					SD Detected	0.28	
61				Mean of Detected Logged Data	-0.341					SD of Detected Logged Data	0.353	
62												
63				**Critical Values for Background Threshold Values (BTVs)**								
64				Tolerance Factor K (For UTL)	1.944					d2max (for USL)	3.165	
65				**Lognormal GOF Test on Detected Observations Only**								
66				Shapiro Wilk Approximate Test Statistic	0.975				**Shapiro Wilk GOF Test**			
67				5% Shapiro Wilk P Value	0.426				Detected Data appear Lognormal at 5% Significance Level			
68				Lilliefors Test Statistic	0.0743				**Lilliefors GOF Test**			
69				5% Lilliefors Critical Value	0.11				Detected Data appear Lognormal at 5% Significance Level			
70				**Detected Data appear Lognormal at 5% Significance Level**								
71												
72				**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**								
73				Mean in Original Scale	0.663					Mean in Log Scale	-0.498	
74				SD in Original Scale	0.291					SD in Log Scale	0.412	
75				95% UTL95% Coverage	1.355					95% BCA UTL95% Coverage	1.46	
76				95% Bootstrap (%) UTL95% Coverage	1.46					95% UPL (t)	1.211	
77				90% Percentile (z)	1.031					95% Percentile (z)	1.198	
78				99% Percentile (z)	1.587					95% USL	2.243	
79												
80				**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**								
81				KM Mean of Logged Data	-0.504					95% KM UTL (Lognormal)95% Coverage	1.379	
82				KM SD of Logged Data	0.424					95% KM UPL (Lognormal)	1.228	
83				95% KM Percentile Lognormal (z)	1.214					95% KM USL (Lognormal)	2.315	
84												
85	**Total Dissolved Solids**											
86												
87	**General Statistics**											
88				Total Number of Observations	78					Number of Distinct Observations	71	
89				Minimum	305					First Quartile	531	
90				Second Largest	1380					Median	706.5	
91				Maximum	1380					Third Quartile	846.8	
92				Mean	709.3					SD	270.4	
93				Coefficient of Variation	0.381					Skewness	0.533	
94				Mean of logged Data	6.49					SD of logged Data	0.397	
95												
96				**Critical Values for Background Threshold Values (BTVs)**								
97				Tolerance Factor K (For UTL)	1.965					d2max (for USL)	3.123	
98												
99				**Nonparametric Distribution Free Background Statistics**								
100				**Data do not follow a Discernible Distribution (0.05)**								
101												
102				**Nonparametric Upper Limits for Background Threshold Values**								
103				Order of Statistic, r	77					95% UTL with 95% Coverage	1380	
104				Approx, f used to compute achieved CC	2.026					Approximate Actual Confidence Coefficient achieved by UTL	0.907	
105										Approximate Sample Size needed to achieve specified CC	93	
106				95% Percentile Bootstrap UTL with 95% Coverage	1380					95% BCA Bootstrap UTL with 95% Coverage	1312	
107				95% UPL	1243					90% Percentile	1073	
108				90% Chebyshev UPL	1526					95% Percentile	1240	

109				95% Chebyshev UPL	1896					99% Percentile	1380
110				95% USL	1380						
111											
112											
113	**Sulfate as SO4**										
114											
115	**General Statistics**										
116				Total Number of Observations	65					Number of Distinct Observations	62
117										Number of Missing Observations	6
118				Minimum	4.6					First Quartile	36.5
119				Second Largest	233					Median	55.4
120				Maximum	244					Third Quartile	102
121				Mean	79.68					SD	62.76
122				Coefficient of Variation	0.788					Skewness	1.269
123				Mean of logged Data	4.052					SD of logged Data	0.89
124											
125					**Critical Values for Background Threshold Values (BTVs)**						
126				Tolerance Factor K (For UTL)	2					d2max (for USL)	3.057
127											
128					**Lognormal GOF Test**						
129				Shapiro Wilk Test Statistic	0.938					**Shapiro Wilk Lognormal GOF Test**	
130				5% Shapiro Wilk P Value	0.00403					Data Not Lognormal at 5% Significance Level	
131				Lilliefors Test Statistic	0.0983					**Lilliefors Lognormal GOF Test**	
132				5% Lilliefors Critical Value	0.11					Data appear Lognormal at 5% Significance Level	
133					**Data appear Approximate Lognormal at 5% Significance Level**						
134											
135					**Background Statistics assuming Lognormal Distribution**						
136				95% UTL with 95% Coverage	341.3					90% Percentile (z)	180
137				95% UPL (t)	257.1					95% Percentile (z)	248.8
138				95% USL	874.5					99% Percentile (z)	456.4
139											
140											
141	**Boron**										
142											
143					**General Statistics**						
144				Total Number of Observations	69					Number of Missing Observations	2
145				Number of Distinct Observations	43						
146				Number of Detects	55					Number of Non-Detects	14
147				Number of Distinct Detects	43					Number of Distinct Non-Detects	2
148				Minimum Detect	0.012					Minimum Non-Detect	0.02
149				Maximum Detect	3.4					Maximum Non-Detect	0.1
150				Variance Detected	0.226					Percent Non-Detects	20.29%
151				Mean Detected	0.244					SD Detected	0.476
152				Mean of Detected Logged Data	-2.163					SD of Detected Logged Data	1.188
153											
154					**Nonparametric Distribution Free Background Statistics**						
155					**Data do not follow a Discernible Distribution (0.05)**						
156											
157					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**						
158				Order of Statistic, r	68					95% UTL with95% Coverage	1.1
159				Approx, f used to compute achieved CC	1.789					Approximate Actual Confidence Coefficient achieved by UTL	0.866
160				Approximate Sample Size needed to achieve specified CC	93					95% UPL	0.59
161				95% USL	3.4					95% KM Chebyshev UPL	2.09
162											

	A	B	C	D	E	F	G	H	I	J	K	L
163	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
164	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
165	and consists of observations collected from clean unimpacted locations.											
166	The use of USL tends to provide a balance between false positives and false negatives provided the data											
167	represents a background data set and when many onsite observations need to be compared with the BTV.											
168												


Box Plot for pH
pH
7.6
7.4
7.2
7.0
6.8
6.6
7.7
7.3
7.0
6.9
6.5
1