SKB Environmental, Inc.

2019 Coal Combustion Residuals Annual Monitoring Report

SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota
Permit SW-383

January 31, 2020

Coal Combustion Residuals Annual Groundwater Monitoring Report

SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota
Permit SW-383

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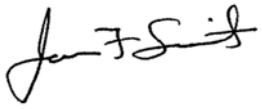
Date:
January 31, 2020



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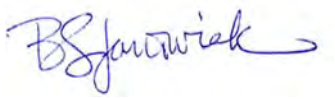

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: 
Typed or Printed Name: Kevin Michael Lienau
Date: 01/31/2020 License Number: 25086

Table of Contents

Figures

Tables

Appendices

Acronyms

BTV	Background Threshold Values
CCR	Coal Combustion Residuals (CCR)
CFR	Code of Federal Regulations
COC	Chemicals of Concern
GES	Groundwater & Environmental Services, Inc.
GPS	Groundwater Protection Standards
Eurofins TA	Eurofins Test America, Inc.
ug/L	micrograms per liter
mg/l	milligrams per liter
MPCA	Minnesota Pollution Control Agency
NGVD	National Geodetic Vertical Datum
QA/QC	Quality assurance/quality control
Report	Coal Combustion Residuals Annual Monitoring Report
SKB Rosemount Landfill	SKB Rosemount Industrial Waste Facility
SSI	Statistically Significant Increase
USL	Upper Simultaneous Limit

1 Introduction

The *2019 Combustion Coal Residuals Annual Monitoring Report* (Report) was prepared to summarize the results of 2019 groundwater monitoring events and associated analysis for Appendix III (detection monitoring) and Appendix IV (assessment monitoring) to Part 257 at the SKB Rosemount Industrial Waste Facility (SKB Rosemount Landfill). The SKB Landfill operates under Minnesota Pollution Control Agency (MPCA) Site Permit Number SW-383. The SKB Rosemount Landfill is located at 13425 Courthouse Boulevard, Rosemount, Dakota County, Minnesota (**Figure 1**).

Per CFR 40.257.90 – 257.98, 2 groundwater sampling events were conducted at the SKB Rosemount Landfill in the spring and fall of 2019. Analytical results from the groundwater monitoring events are compared and evaluated to Background Threshold Values (BTVs) established for the SKB Rosemount Landfill. Spring 2019 sampling results indicated a Boron concentration exceeding the BTV at MW-3S, which was determined to be a statistically significant increase (SSI). Thus, Appendix IV (assessment monitoring) analytes were included in the fall 2019 sampling event.

1.1 Scope of Work

The following scope of work was conducted for the 2019 Coal Combustion Residuals (CCR) groundwater monitoring events:

- Conduct 2 gauging and sampling events of the site's monitoring wells.
- 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 CCR Annual Monitoring Report summarizing the groundwater sampling and statistical evaluation.

2 Site Background

2.1 Site Location and Description

SKB Rosemount Landfill was initially operated as an industrial waste containment facility. In the fall of 1999, the facility opened a Municipal Solid Waste Incinerator Ash cell (Cell 4), in the summer of 2004 the facility opened a Construction and Demolition cell (Cell 5), and in the fall 2009 the facility opened the 3M cell (Cell 3M). The site is located within a 236-acre parcel of land in Sections 19, 20, and 29, Township 115 North, Range 18 West, Dakota County, Minnesota (**Figure 1**). With reference to roadways, the facility is located between State Highway 55 and Ehlers Path East. The facility entrance is from State Highway 55.

Located in the Vermillion River watershed, the historical property prior to development, consist of rolling topography ranging in elevation from 820 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) in the southwest corner to 907 feet above NGVD 29 near the middle of the site. The site has since been altered, with the low point 800 feet above NGVD in the bottom of Cell 3A and Cell 3B to 930 feet above NGVD at the top of Cell 1, Cell 2, and Cell 3A. A seasonal pond is located on the southwest corner of the property. The pond is historically dry except following heavy rain events. Stormwater flows either to natural depressions scattered about the site or to stormwater retention areas in the southwest and north-central area of the property. Stormwater collected in these areas infiltrates into the soil. The nearest open water body is the Mississippi River located approximately 1 mile northeast of the site.

3 Monitoring Network Systems and Sampling Schedule

The groundwater monitoring network at the SKB Rosemount Landfill was designed based on the analysis of local and regional hydrologic conditions. Groundwater beneath the site generally moves from southwest (upgradient) to northeast (downgradient). Currently, the monitoring network consists of 28 monitoring wells (**Figure 2**).

The monitoring wells used as data collection points have been divided into 5 groups for the purpose of this report:

- Shallow Upgradient Monitoring Points (designated U#S). The shallow upgradient monitoring points consist of the monitoring wells that are completed in the shallow water table aquifer south (upgradient) of the compliance boundary.
- Deep Upgradient Monitoring Points (designated U#D). The deep upgradient monitoring points consist of monitoring wells that are completed in the Outwash/Prairie du Chien aquifer south of the compliance boundary.
- Shallow Downgradient Monitoring Points (designated D#S). The shallow downgradient monitoring points consist of the monitoring wells that are completed in the shallow water table aquifer along the north (downgradient) compliance boundary.
- Deep Downgradient Monitoring Points (designated D#D). The deep downgradient monitoring points consist of monitoring wells that are completed in the Outwash/Prairie du Chien aquifer north (downgradient) of the compliance boundary.
- Cell Wells (designated CW#). The cell wells are monitoring wells completed in the shallow aquifer immediately downgradient of the cell sumps.

For the CCR evaluation, 2 groundwater monitoring events were conducted in 2019 on the following dates:

- April 1-3, 2019
- September 25-26, 2019

4 Groundwater Sample Methodology

For the SKB Rosemount 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 well dedicated, pneumatic low-flow bladder pump, each well was purged and field stabilization parameters including temperature, pH, and specific conductance were measured.

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 (Eurofins TA) of Amherst, New York.

Groundwater samples were collected from 17 monitoring wells during the 2 sampling events in 2019 and were analyzed for parameters specified in Appendix III (detection monitoring) and Appendix IV (assessment monitoring) to Part 257 and are noted below:

Appendix III

General Chemistry

- Chloride (Method 300.0)
- Fluoride (Method 300.0)
- Sulfate as SO_4 (Method 300.0)
- pH (Standard Method 4500 H+ B)
- Total Dissolved Solids (Standard Method 2540C)

Metals

- Boron (Method 6010D)
- Calcium (Method 6010D)

Appendix IV

Metals (Total)

- 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 6010D, 6020B, and 7470A. Radium was analyzed by Method 903.0 and 904.0.

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 groundwater monitoring events are presented in **Table 1**. Groundwater contours maps were generated for the April and September 2019 monitoring events. Groundwater elevation contour maps for both the water table and the deeper monitoring zone are presented in **Figures 3** through **6**. The groundwater flow is to the northeast across the site. This flow direction is consistent with historical flow direction.

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 **Tables 2** and **3**. 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 Rosemount Landfill are provided in **Table 5**. Comparing the spring 2019 sampling results to the BTVs indicate that Boron exceeded the BTV of 0.150 milligrams per liter (mg/l) and was determined to be statistically significant.

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

Boron (BTV = 0.150 mg/l)

- Downgradient monitoring well
  - D-3S (0.31 mg/l) (4/2/2019) – Exceedance confirmed. Statistically significant.
  - D-3S (0.40 mg/l) (9/25/2019)

Calcium (BTV = 131 mg/l)

- Sidegradient/Downgradient monitoring well
  - D-7 (171 mg/l) (9/26/2019) - Exceedance not confirmed. Confirmation sampling scheduled for spring of 2020.

Chloride (BTV = 83.5 mg/l)

- Downgradient monitoring well
  - D-3S (104 mg/l) (9/25/2019) – Exceedance not confirmed. Confirmation sampling scheduled for spring 2020.
  - D-5S2 (125 mg/l) (9/25/2019) - Exceedance not confirmed. Confirmation sampling scheduled for spring 2020.

Appendix IV Analytes - Result Summary of BTV Exceedances

Arsenic (1.6 ug/l)

- Sidegradient/Downgradient monitoring well
  - D-7 (7.3 ug/l) (9/26/2019) - Exceedance not confirmed. Confirmation sampling scheduled for spring of 2020.

Cobalt (1.2 ug/l)

- Sidegradient/Downgradient monitoring well
  - D-7 (16.7 ug/l) (9/26/2019) – Exceedance not confirmed. Confirmation sampling scheduled for spring 2020.

6 Statistical Evaluation Data

This groundwater statistical evaluation for landfill monitoring is conducted in accordance with CFR 40.257.93(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 September 2019.

Statistical evaluation of the 2017 - 2019 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 SSI Determination

The detected concentrations for the first and second half 2019 sampling event with the respective USL are listed below. Compliance is determined by comparing the current concentration to the calculated USL. Confirmation sampling in the first half of 2019 for Boron at D-3S reported a concentration above the BTV, thus indicating a SSI.

Comparison of 2019 Confirmed COC Concentrations to USLs

Monitoring Well	Analyte	First Half 2019 Conc (mg/l unless noted)	USL Conc (mg/l unless noted)	Second Half 2019 Conc (mg/L unless noted)	Percent Non-Detect	USL Notes
D-3S	Boron	**0.31**	0.150	**0.40**	1.7%	Non-parametric distribution Confirmed SSI (First Half of 2019)
D-3S	Chloride	45.7	83.5	**104**	0%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020
D-5S2	Barium	NS	0.076	**0.080**	1%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020
D-5S2	Chloride	64.2	83.5	**125**	0%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020

D-7	Calcium	107	131	**171**	0.9%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020
D-7	Arsenic	NS	1.6 ug/l	**7.3** ug/l	98%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020
D-7	Cobalt	NS	1.2 ug/l	**16.7** ug/l	78%	Exceedance not confirmed. Confirmation sampling scheduled for spring 2020

Notes:

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

7 Conclusions

The groundwater data collected in the 2017 – 2019 sampling events were statistically tested following the concepts outlined in this report to form a background data set. Interwell USLs were developed for Chloride Fluoride, Sulfate as SO_4, Total Dissolved Solids, Boron, Calcium and in fifteen monitoring wells (D-1D, D-1S, D-2D, D-2S, D-3D, D-3S, D-4D, D-4S, D-5D, D-5S2, D-7, D-8, D-9, U-4D, and U-4S). 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. Compliance is determined by comparing the currently detected concentrations to the calculated USL. During the fall 2018 sampling event, a Boron concentration of 0.22 mg/l was detected at D-3S, which exceeded the calculated USL of 0.150 mg/l. Resampling of D-3S in the spring of 2019 determined the exceedance is statistically significant.

Subsequent sampling for Appendix III (detection monitoring) and Appendix IV (assessment monitoring) analytes was completed during the fall 2019 event. Compliance is determined by comparing the currently detected concentrations to the calculated USL. Chloride (D-3S), Calcium (D-7), Barium (D-5S2 and D-7), Arsenic (D-7), Chromium (D-7 and U-4S), Cobalt (D-7), Lead (D-7), Molybdenum (D-7), and Thallium (D-7) concentrations were detected above respective USLs. Resampling is required to determine if the exceedances are statistically significant.

8 Report Summary

Per the CFR 40.257.90 – 257.98, 2 monitoring events were conducted at the SKB Lansing Rosemount Landfill in 2019. Groundwater samples were analyzed for parameters indicated in Appendix III to Part 257. Because Boron was determined to be a SSI, Appendix IV analytes were included in the fall 2019 sampling event.

Groundwater samples were collected from the monitoring network's 17 monitoring wells located at the SKB Rosemount Landfill during the monitoring events. Groundwater elevation information from the monitoring data indicates a northeasterly groundwater flow beneath the landfill.

Groundwater sampling was performed in the spring and fall of 2019. The following analytes were reported above the calculated BTVs:

Appendix III Analytes

- A Boron groundwater concentration was detected above the BTV at downgradient monitoring well D-3S during the spring 2019 sampling event. The exceedance to be considered statistically significant.

- Calcium concentrations were detected above the BTV at sidegradient/downgradient well D-7 during the fall 2019 sampling event. A subsequent confirmation of the concentration must occur for the exceedance to be considered statistically significant.

- Chloride concentrations were detected above the BTV at downgradient wells D-3S and D-5S2 during the fall 2019 sampling event. A subsequent confirmation of the concentrations must occur for the exceedances to be considered statistically significant.

Appendix IV Analytes

- A Barium concentration was detected above the BTV at downgradient well D-5S2 during the fall 2019 sampling event. A subsequent confirmation of the concentration must occur for the exceedance to be considered statistically significant.

- Arsenic and Cobalt concentrations were detected above the BTV at sidegradient/downgradient well D-7 during the fall 2019 sampling event. A subsequent confirmation of the concentrations must occur for the exceedances to be considered statistically significant.

9 Recommendations

CCR groundwater monitoring events will be conducted in 2020 by the following schedule:

Early February 2020

Conduct a groundwater sampling event of the site's monitoring well network and analyze the groundwater samples for constituents listed in Appendix III and Appendix IV (only analytes detected in the fall 2019 event).

Fall 2020

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

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 constituent listed in Appendix III and Appendix IV has occurred at any monitoring well. The evaluation will be performed using a tolerance or prediction interval procedure (CFR 40.257.93(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 establish Groundwater Protection Standards (GPS).

A 2020 Annual Monitoring Report will be prepared and include sampling results from the 2020 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTVs and GPS.

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.

United States Geological Survey, 1967 (revised 1993). *7.5-minute quadrangle map, Inver Grove Heights.*

Figures

SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1993
INVER GROVE HEIGHTS, MINNESOTA
CONTOUR INTERVAL = 10'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY: JS	SKB ENVIRONMENTAL INC. ROSEMOUNT FACILITY 13425 COURTHOUSE BOULEVARD ROSEMOUNT, MINNESOTA
REVIEWED BY: JS	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 1-10-14 / FIGURE: 1

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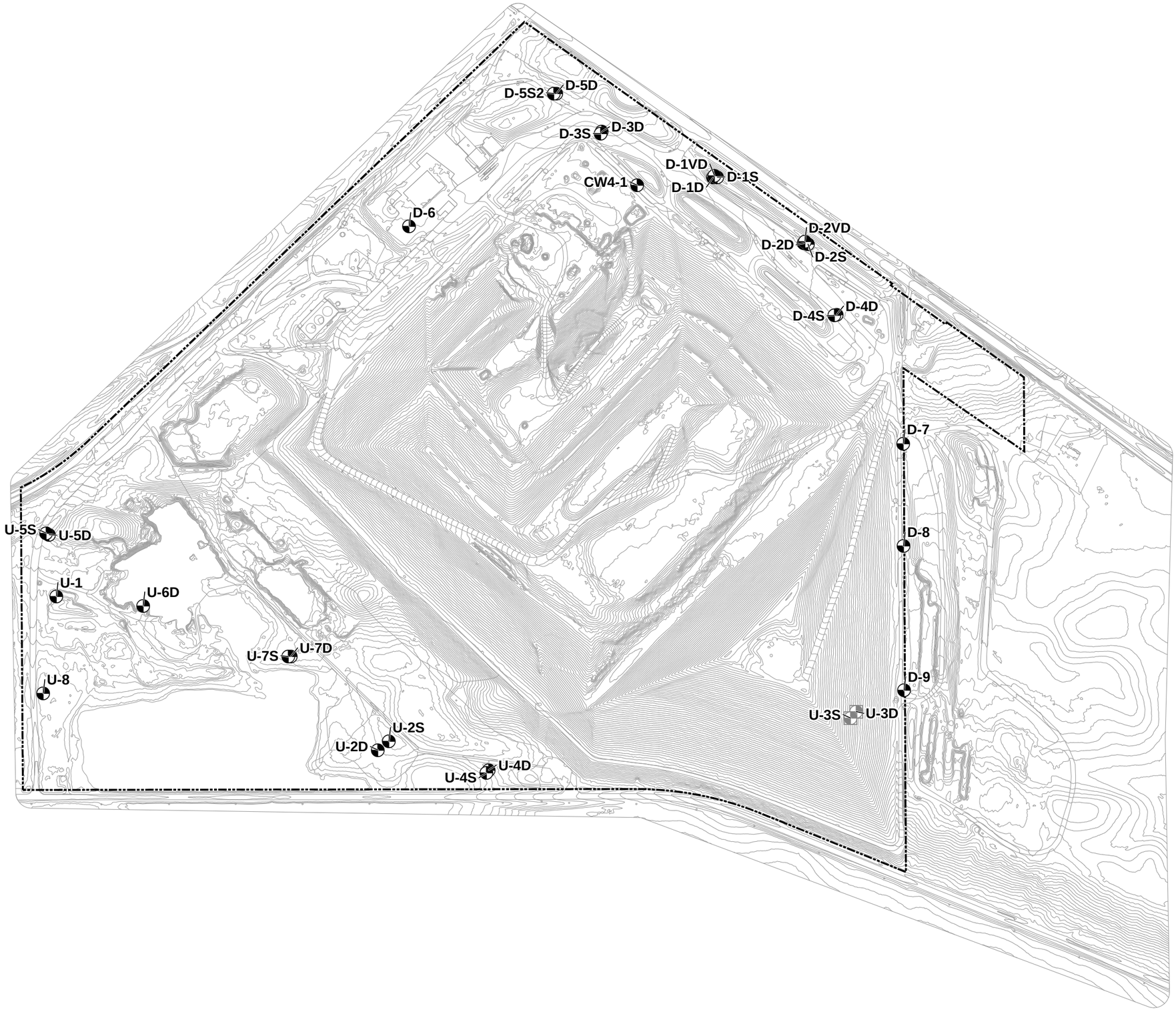

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- ABANDONED MONITORING WELL

Site Map

SKB Environmental Inc.
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **JFS**

Date **1/9/20**
Figure **2**

Scale In Feet (Approximate)
0 450

Groundwater & Environmental Services, Inc.

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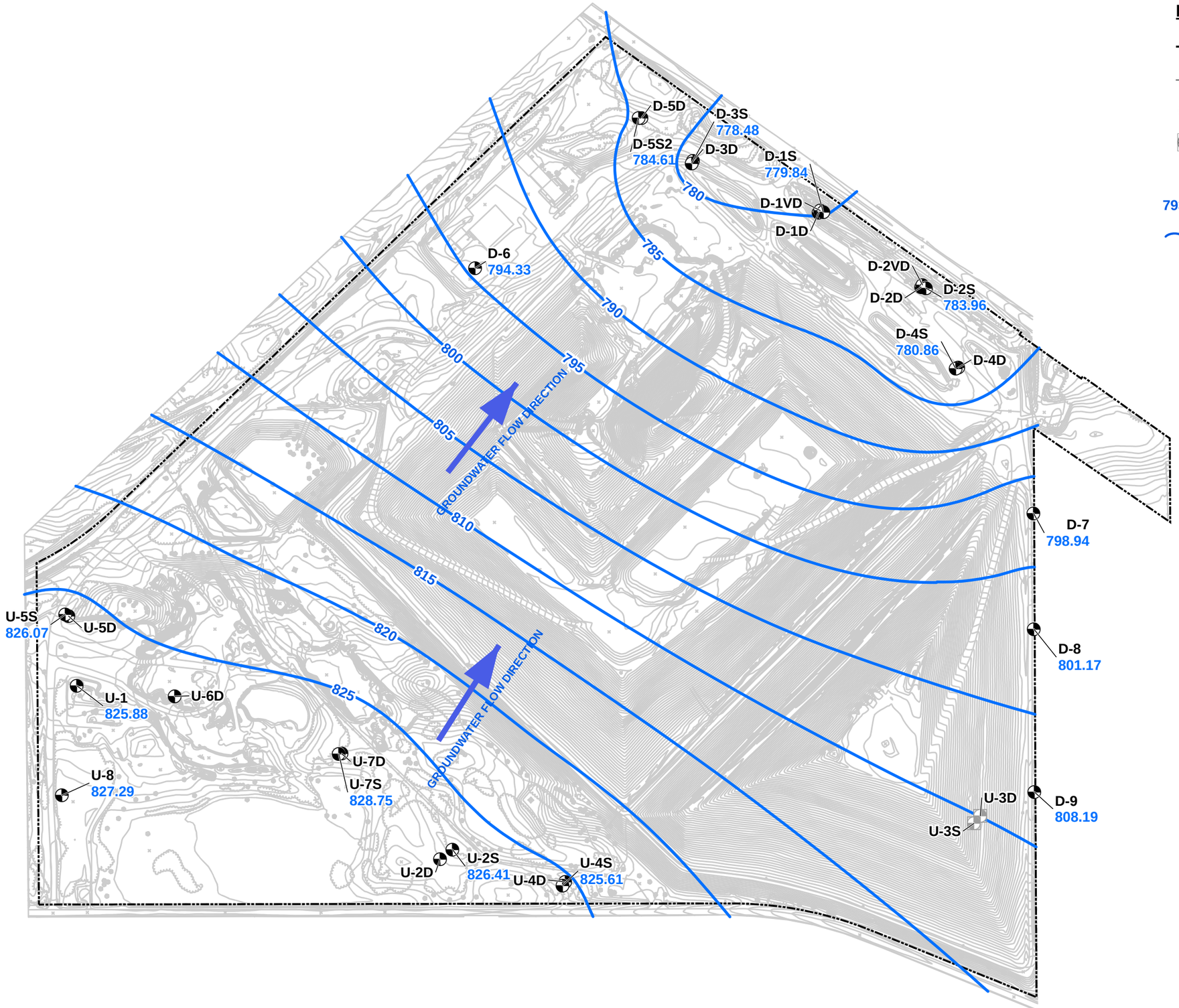

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL
- 793.55 MEASURED GROUNDWATER ELEVATION (ft MSL)
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)

Water Table Contour Map
Shallow Zone - April 1, 2019

SKB Environmental Inc.
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn **JTL**
Designed **DMC**
Approved **JFS**
Date **5/10/19**
Figure **3**

Scale In Feet (Approximate)
0 400

Groundwater & Environmental Services, Inc.

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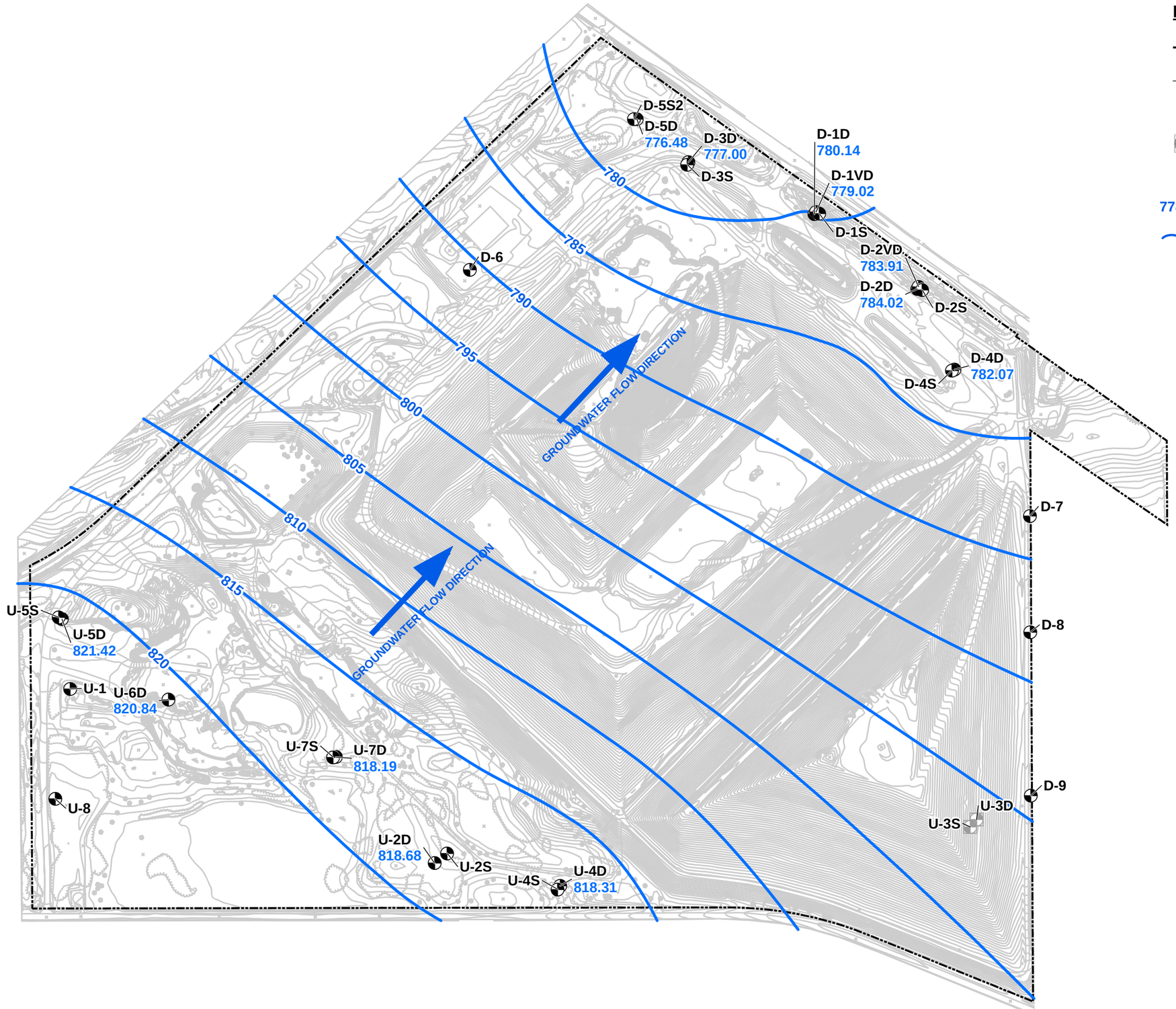

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL
- 778.38 MEASURED GROUNDWATER ELEVATION (ft MSL)
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)

Potentiometric Surface
Contour Map
April 1, 2019

SKB Environmental Inc.
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn **JTL**
Designed **DMC**
Approved **JFS**

Date **5/9/19**
Figure **4**

Scale In Feet (Approximate)
0 400

Groundwater & Environmental Services, Inc.

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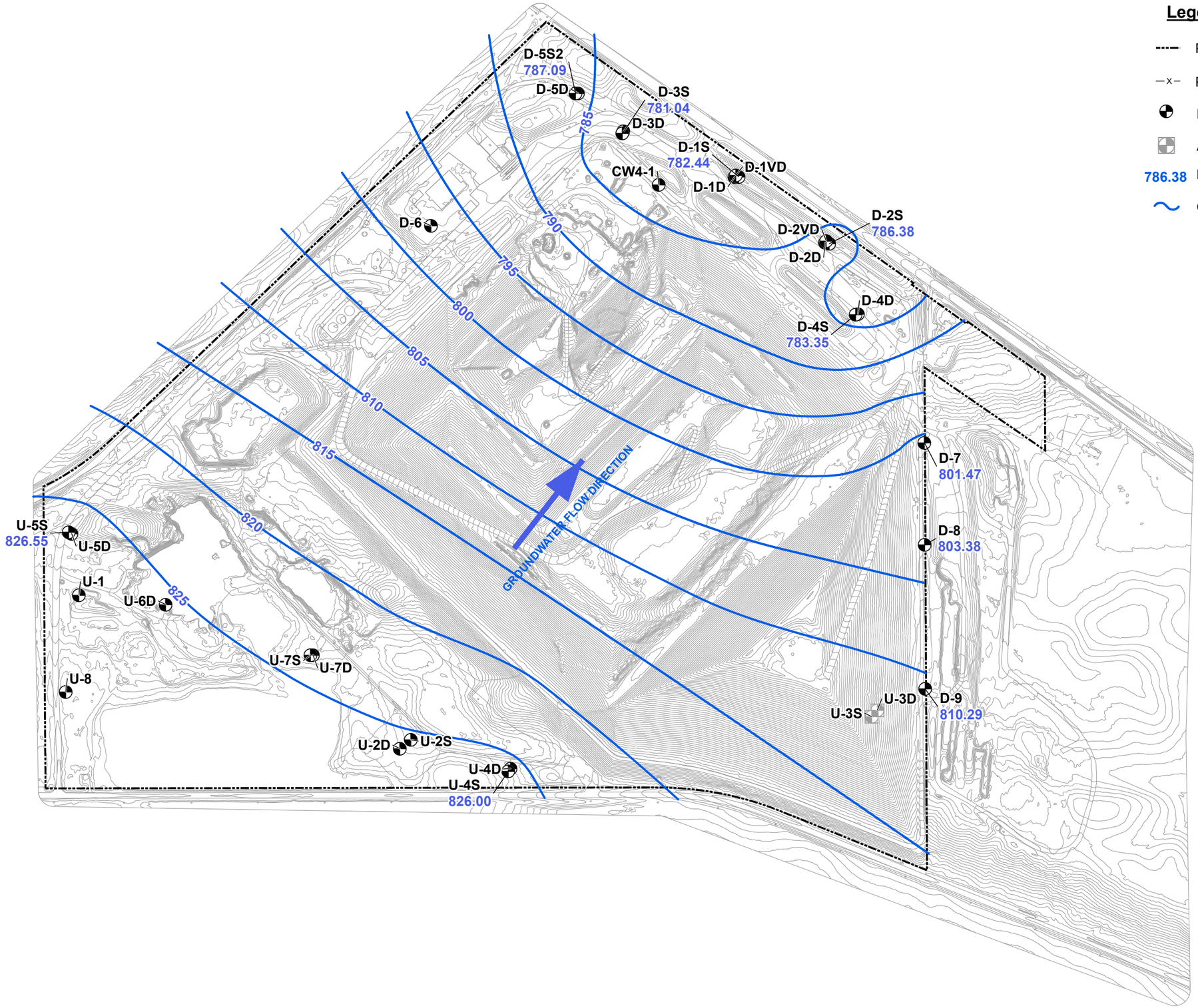

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- ABANDONED MONITORING WELL
- 786.38 MEASURED GROUNDWATER ELEVATION (ft MSL)
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)

Water Table Contour Map
September 25 - 26, 2019

SKB Environmental Inc.
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn	**GKS**
Designed	**DMC**
Approved	**JFS**
Date	**1/15/20**
Figure	**5**

Scale In Feet (Approximate)
0 450

Groundwater & Environmental Services, Inc.

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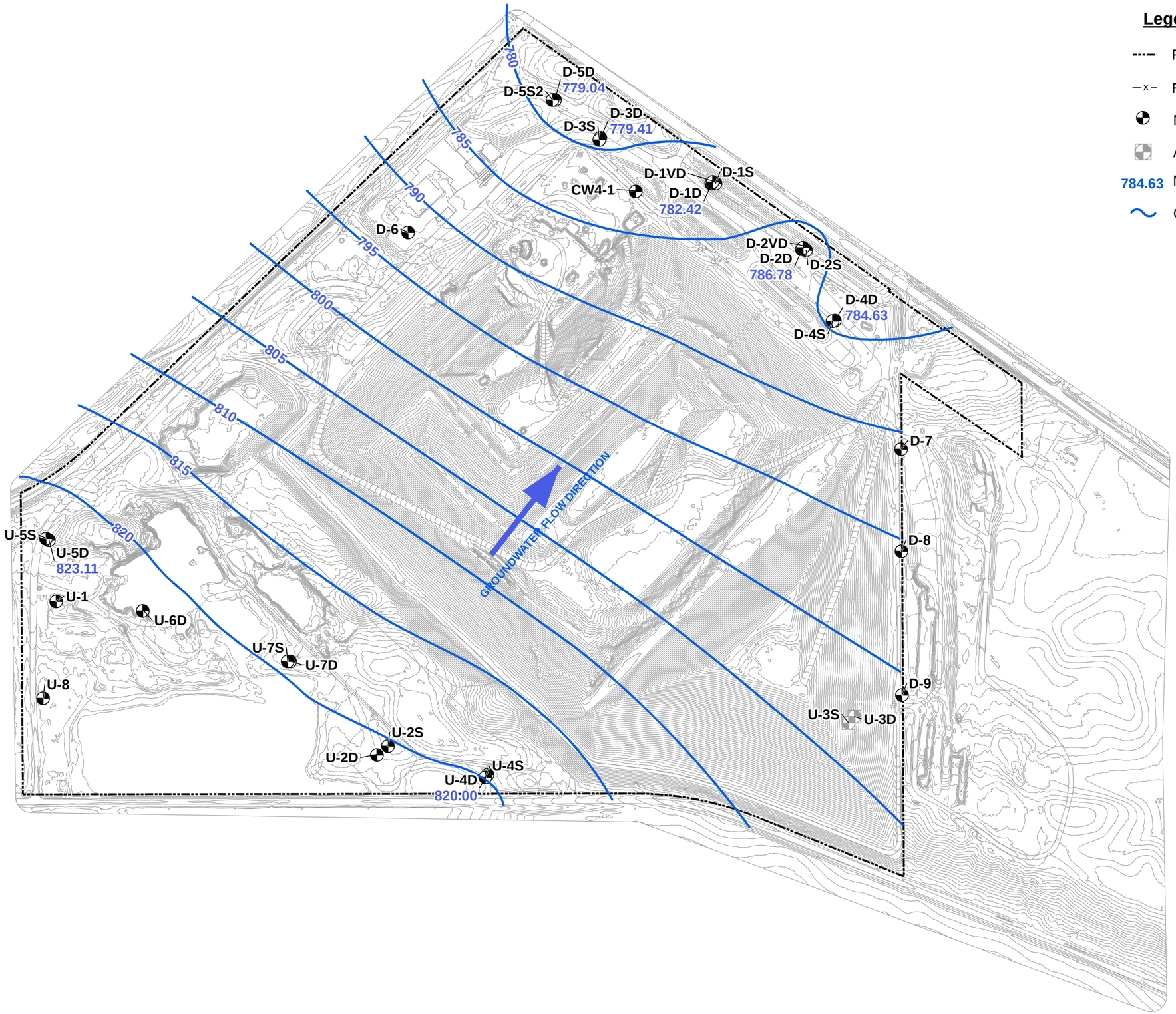

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- ABANDONED MONITORING WELL
- 784.63 MEASURED GROUNDWATER ELEVATION (ft MSL)
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)

Potentiometric Surface Contour Map
September 25 - 26, 2019

SKB Environmental Inc.
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **JFS**
Date **1/15/20**
Figure **6**

Scale In Feet (Approximate)
0 450

Groundwater & Environmental Services, Inc.

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Tables

2019 CCR Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 1

Groundwater Elevations
Downgradient Deep Wells

DATE	D-1D	D-1VD	D-2D	D-2VD	D-3D	D-4D	D-5D
04/01/2019	780.14	779.02	784.02	783.91	777.00	782.07	776.48
09/25/2019	--	--	--	--	779.41	--	779.04
09/26/2019	782.42	--	786.78	--	--	784.63	--

2019 CCR Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 1

Groundwater Elevations
Downgradient Shallow Wells

DATE	D-1S	D-2S	D-3S	D-4S	D-5S2	D-6	D-7	D-8	D-9
04/01/2019	779.84	783.96	778.48	780.86	784.61	794.33	798.94	801.17	808.19
09/25/2019	--	--	781.04	--	787.09	--	--	--	--
09/26/2019	782.44	7.86.38		783.35	--	--	801.47	803.38	810.29

Table 1

Groundwater Elevations
Upgradient Deep Wells

DATE	U-2D	U-4D	U-5D	U-6D	U-7D
04/01/2019	818.68	818.31	821.42	820.84	818.19
09/25/2019	--	820.00	823.11	--	--

Table 1

Groundwater Elevations
Upgradient Shallow Wells

DATE	U-1	U-2S	U-4S	U-5S	U-7S	U-8
04/01/2019	825.88	826.41	825.61	826.07	828.75	827.29
09/25/2019	--	--	826.00	826.55	--	--

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Units	CAS #
D-1D	04/02/2019	Boron	< 0.020	mg/l	7440-42-8
D-1D	09/26/2019	Boron	0.020	mg/l	7440-42-8
D-1D	04/02/2019	Calcium	90.2	mg/l	7440-70-2
D-1D	09/26/2019	Calcium	86.9	mg/l	7440-70-2
D-1D	04/02/2019	Chloride	33.0	mg/l	16887-00-6
D-1D	09/26/2019	Chloride	28.6	mg/l	16887-00-6
D-1D	04/02/2019	Fluoride	< 0.050	mg/l	16984-48-8
D-1D	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-1D	04/02/2019	pH	7.8	pH UNITS	PH
D-1D	09/26/2019	pH	7.6	pH UNITS	PH
D-1D	04/02/2019	Sulfate as SO4	29.2	mg/l	14808-79-8
D-1D	09/26/2019	Sulfate as SO4	27.2	mg/l	14808-79-8
D-1D	04/02/2019	Total Dissolved Solids	379	mg/l	TDS
D-1D	09/26/2019	Total Dissolved Solids	387	mg/l	TDS
D-1S	04/02/2019	Boron	0.033	mg/l	7440-42-8
D-1S	09/26/2019	Boron	0.035	mg/l	7440-42-8
D-1S	04/02/2019	Calcium	110	mg/l	7440-70-2
D-1S	09/26/2019	Calcium	104	mg/l	7440-70-2
D-1S	04/02/2019	Chloride	33.5	mg/l	16887-00-6
D-1S	09/26/2019	Chloride	32.1	mg/l	16887-00-6
D-1S	04/02/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-1S	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-1S	04/02/2019	pH	7.6	pH UNITS	PH
D-1S	09/26/2019	pH	7.2	pH UNITS	PH
D-1S	04/02/2019	Sulfate as SO4	25.1	mg/l	14808-79-8
D-1S	09/26/2019	Sulfate as SO4	21.5	mg/l	14808-79-8
D-1S	04/02/2019	Total Dissolved Solids	420	mg/l	TDS
D-1S	09/26/2019	Total Dissolved Solids	512	mg/l	TDS
D-2D	04/03/2019	Boron	< 0.020	mg/l	7440-42-8
D-2D	09/26/2019	Boron	< 0.020	mg/l	7440-42-8
D-2D	04/03/2019	Calcium	90.9	mg/l	7440-70-2
D-2D	09/26/2019	Calcium	81.5	mg/l	7440-70-2
D-2D	04/03/2019	Chloride	33.5	mg/l	16887-00-6
D-2D	09/26/2019	Chloride	31.1	mg/l	16887-00-6
D-2D	04/03/2019	Fluoride	0.066	mg/l	16984-48-8
D-2D	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-2D	04/03/2019	pH	7.7	pH UNITS	PH
D-2D	09/26/2019	pH	7.5	pH UNITS	PH
D-2D	04/03/2019	Sulfate as SO4	23.3	mg/l	14808-79-8
D-2D	09/26/2019	Sulfate as SO4	21.2	mg/l	14808-79-8
D-2D	04/03/2019	Total Dissolved Solids	362	mg/l	TDS
D-2D	09/26/2019	Total Dissolved Solids	424	mg/l	TDS
D-2S	04/03/2019	Boron	0.021	mg/l	7440-42-8
D-2S	09/26/2019	Boron	0.025	mg/l	7440-42-8
D-2S	04/03/2019	Calcium	105	mg/l	7440-70-2
D-2S	09/26/2019	Calcium	104	mg/l	7440-70-2
D-2S	04/03/2019	Chloride	46.2	mg/l	16887-00-6
D-2S	09/26/2019	Chloride	41.7	mg/l	16887-00-6
D-2S	04/03/2019	Fluoride	< 0.050	mg/l	16984-48-8

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Units	CAS #
D-2S	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-2S	04/03/2019	pH	7.7	pH UNITS	PH
D-2S	09/26/2019	pH	7.3	pH UNITS	PH
D-2S	04/03/2019	Sulfate as SO4	25.6	mg/l	14808-79-8
D-2S	09/26/2019	Sulfate as SO4	19.5	mg/l	14808-79-8
D-2S	04/03/2019	Total Dissolved Solids	408	mg/l	TDS
D-2S	09/26/2019	Total Dissolved Solids	435	mg/l	TDS
D-3D	04/02/2019	Boron	0.035	mg/l	7440-42-8
D-3D	09/25/2019	Boron	0.039	mg/l	7440-42-8
D-3D	04/02/2019	Calcium	104	mg/l	7440-70-2
D-3D	09/25/2019	Calcium	88.0	mg/l	7440-70-2
D-3D	04/02/2019	Chloride	45.7	mg/l	16887-00-6
D-3D	09/25/2019	Chloride	55.1	mg/l	16887-00-6
D-3D	04/02/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-3D	09/25/2019	Fluoride	< 0.25	mg/l	16984-48-8
D-3D	04/02/2019	pH	7.7	pH UNITS	PH
D-3D	09/25/2019	pH	7.4	pH UNITS	PH
D-3D	04/02/2019	Sulfate as SO4	34.2	mg/l	14808-79-8
D-3D	09/25/2019	Sulfate as SO4	31.1	mg/l	14808-79-8
D-3D	04/02/2019	Total Dissolved Solids	433	mg/l	TDS
D-3D	09/25/2019	Total Dissolved Solids	411	mg/l	TDS
D-3S	04/02/2019	Boron	**0.31**	mg/l	7440-42-8
D-3S	09/25/2019	Boron	**0.40**	mg/l	7440-42-8
D-3S	04/02/2019	Calcium	111	mg/l	7440-70-2
D-3S	09/25/2019	Calcium	118	mg/l	7440-70-2
D-3S	04/02/2019	Chloride	75.4	mg/l	16887-00-6
D-3S	09/25/2019	Chloride	**104**	mg/l	16887-00-6
D-3S	04/02/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-3S	09/25/2019	Fluoride	< 0.25	mg/l	16984-48-8
D-3S	04/02/2019	pH	7.7	pH UNITS	PH
D-3S	09/25/2019	pH	7.4	pH UNITS	PH
D-3S	04/02/2019	Sulfate as SO4	47.4	mg/l	14808-79-8
D-3S	09/25/2019	Sulfate as SO4	43.3	mg/l	14808-79-8
D-3S	04/02/2019	Total Dissolved Solids	591	mg/l	TDS
D-3S	09/25/2019	Total Dissolved Solids	558	mg/l	TDS
D-4D	04/03/2019	Boron	< 0.020	mg/l	7440-42-8
D-4D	09/26/2019	Boron	< 0.020	mg/l	7440-42-8
D-4D	04/03/2019	Calcium	97.2	mg/l	7440-70-2
D-4D	09/26/2019	Calcium	97.8	mg/l	7440-70-2
D-4D	04/03/2019	Chloride	48.6	mg/l	16887-00-6
D-4D	09/26/2019	Chloride	49.8	mg/l	16887-00-6
D-4D	04/03/2019	Fluoride	0.068	mg/l	16984-48-8
D-4D	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-4D	04/03/2019	pH	7.7	pH UNITS	PH
D-4D	09/26/2019	pH	7.5	pH UNITS	PH
D-4D	04/03/2019	Sulfate as SO4	25.6	mg/l	14808-79-8
D-4D	09/26/2019	Sulfate as SO4	22.3	mg/l	14808-79-8
D-4D	04/03/2019	Total Dissolved Solids	392	mg/l	TDS
D-4D	09/26/2019	Total Dissolved Solids	447	mg/l	TDS

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Units	CAS #
D-4S	04/03/2019	Boron	< 0.020	mg/l	7440-42-8
D-4S	09/26/2019	Boron	0.020	mg/l	7440-42-8
D-4S	04/03/2019	Calcium	103	mg/l	7440-70-2
D-4S	09/26/2019	Calcium	100	mg/l	7440-70-2
D-4S	04/03/2019	Chloride	49.3	mg/l	16887-00-6
D-4S	09/26/2019	Chloride	50.1	mg/l	16887-00-6
D-4S	04/03/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-4S	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-4S	04/03/2019	pH	7.7	pH UNITS	PH
D-4S	09/26/2019	pH	7.5	pH UNITS	PH
D-4S	04/03/2019	Sulfate as SO4	26.1	mg/l	14808-79-8
D-4S	09/26/2019	Sulfate as SO4	22.9	mg/l	14808-79-8
D-4S	04/03/2019	Total Dissolved Solids	405	mg/l	TDS
D-4S	09/26/2019	Total Dissolved Solids	424	mg/l	TDS
D-5D	04/02/2019	Boron	< 0.020	mg/l	7440-42-8
D-5D	09/25/2019	Boron	< 0.020	mg/l	7440-42-8
D-5D	04/02/2019	Calcium	104	mg/l	7440-70-2
D-5D	09/25/2019	Calcium	95.7	mg/l	7440-70-2
D-5D	04/02/2019	Chloride	30.1	mg/l	16887-00-6
D-5D	09/25/2019	Chloride	30.7	mg/l	16887-00-6
D-5D	04/02/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-5D	09/25/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-5D	04/02/2019	pH	7.7	pH UNITS	PH
D-5D	09/25/2019	pH	7.4	pH UNITS	PH
D-5D	04/02/2019	Sulfate as SO4	33.3	mg/l	14808-79-8
D-5D	09/25/2019	Sulfate as SO4	29.8	mg/l	14808-79-8
D-5D	04/02/2019	Total Dissolved Solids	411	mg/l	TDS
D-5D	09/25/2019	Total Dissolved Solids	428	mg/l	TDS
D-5S2	04/02/2019	Boron	0.088	mg/l	7440-42-8
D-5S2	09/25/2019	Boron	0.15	mg/l	7440-42-8
D-5S2	04/02/2019	Calcium	116	mg/l	7440-70-2
D-5S2	09/25/2019	Calcium	131	mg/l	7440-70-2
D-5S2	04/02/2019	Chloride	64.2	mg/l	16887-00-6
D-5S2	09/25/2019	Chloride	**125**	mg/l	16887-00-6
D-5S2	04/02/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-5S2	09/25/2019	Fluoride	< 0.25	mg/l	16984-48-8
D-5S2	04/02/2019	pH	7.7	pH UNITS	PH
D-5S2	09/25/2019	pH	7.4	pH UNITS	PH
D-5S2	04/02/2019	Sulfate as SO4	52.4	mg/l	14808-79-8
D-5S2	09/25/2019	Sulfate as SO4	57.3	mg/l	14808-79-8
D-5S2	04/02/2019	Total Dissolved Solids	510	mg/l	TDS
D-5S2	09/25/2019	Total Dissolved Solids	516	mg/l	TDS
D-7	04/03/2019	Boron	0.040	mg/l	7440-42-8
D-7	09/26/2019	Boron	0.046	mg/l	7440-42-8
D-7	04/03/2019	Calcium	107	mg/l	7440-70-2
D-7	09/26/2019	Calcium	**171**	mg/l	7440-70-2
D-7	04/03/2019	Chloride	27.3	mg/l	16887-00-6
D-7	09/26/2019	Chloride	42.4	mg/l	16887-00-6
D-7	04/03/2019	Fluoride	< 0.10	mg/l	16984-48-8

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Units	CAS #
D-7	09/26/2019	Fluoride	< 0.25	mg/l	16984-48-8
D-7	04/03/2019	pH	7.7	pH UNITS	PH
D-7	09/26/2019	pH	7.2	pH UNITS	PH
D-7	04/03/2019	Sulfate as SO4	32.2	mg/l	14808-79-8
D-7	09/26/2019	Sulfate as SO4	49.0	mg/l	14808-79-8
D-7	04/03/2019	Total Dissolved Solids	434	mg/l	TDS
D-7	09/26/2019	Total Dissolved Solids	660	mg/l	TDS
D-8	04/03/2019	Boron	< 0.020	mg/l	7440-42-8
D-8	09/26/2019	Boron	< 0.020	mg/l	7440-42-8
D-8	04/03/2019	Calcium	99.1	mg/l	7440-70-2
D-8	09/26/2019	Calcium	95.9	mg/l	7440-70-2
D-8	04/03/2019	Chloride	36.4	mg/l	16887-00-6
D-8	09/26/2019	Chloride	35.4	mg/l	16887-00-6
D-8	04/03/2019	Fluoride	0.093	mg/l	16984-48-8
D-8	09/26/2019	Fluoride	0.090	mg/l	16984-48-8
D-8	04/03/2019	pH	7.8	pH UNITS	PH
D-8	09/26/2019	pH	7.6	pH UNITS	PH
D-8	04/03/2019	Sulfate as SO4	37.3	mg/l	14808-79-8
D-8	09/26/2019	Sulfate as SO4	35.4	mg/l	14808-79-8
D-8	04/03/2019	Total Dissolved Solids	422	mg/l	TDS
D-8	09/26/2019	Total Dissolved Solids	515	mg/l	TDS
D-9	04/03/2019	Boron	< 0.020	mg/l	7440-42-8
D-9	09/26/2019	Boron	< 0.020	mg/l	7440-42-8
D-9	04/03/2019	Calcium	100	mg/l	7440-70-2
D-9	09/26/2019	Calcium	75.9	mg/l	7440-70-2
D-9	04/03/2019	Chloride	35.8	mg/l	16887-00-6
D-9	09/26/2019	Chloride	28.7	mg/l	16887-00-6
D-9	04/03/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-9	09/26/2019	Fluoride	< 0.10	mg/l	16984-48-8
D-9	04/03/2019	pH	7.7	pH UNITS	PH
D-9	09/26/2019	pH	7.5	pH UNITS	PH
D-9	04/03/2019	Sulfate as SO4	26.4	mg/l	14808-79-8
D-9	09/26/2019	Sulfate as SO4	21.5	mg/l	14808-79-8
D-9	04/03/2019	Total Dissolved Solids	416	mg/l	TDS
D-9	09/26/2019	Total Dissolved Solids	386	mg/l	TDS
U-4D	04/01/2019	Boron	< 0.020	mg/l	7440-42-8
U-4D	09/25/2019	Boron	< 0.020	mg/l	7440-42-8
U-4D	04/01/2019	Calcium	89.2	mg/l	7440-70-2
U-4D	09/25/2019	Calcium	90.7	mg/l	7440-70-2
U-4D	04/01/2019	Chloride	37.1	mg/l	16887-00-6
U-4D	09/25/2019	Chloride	34.2	mg/l	16887-00-6
U-4D	04/01/2019	Fluoride	0.084	mg/l	16984-48-8
U-4D	09/25/2019	Fluoride	< 0.10	mg/l	16984-48-8
U-4D	04/01/2019	pH	7.7	pH UNITS	PH
U-4D	09/25/2019	pH	7.5	pH UNITS	PH
U-4D	04/01/2019	Sulfate as SO4	26.4	mg/l	14808-79-8
U-4D	09/25/2019	Sulfate as SO4	23.8	mg/l	14808-79-8
U-4D	04/01/2019	Total Dissolved Solids	389	mg/l	TDS
U-4D	09/25/2019	Total Dissolved Solids	320	mg/l	TDS

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Units	CAS #
U-4S	04/01/2019	Boron	0.022	mg/l	7440-42-8
U-4S	09/25/2019	Boron	< 0.020	mg/l	7440-42-8
U-4S	04/01/2019	Calcium	112	mg/l	7440-70-2
U-4S	09/25/2019	Calcium	72.0	mg/l	7440-70-2
U-4S	04/01/2019	Chloride	46.7	mg/l	16887-00-6
U-4S	09/25/2019	Chloride	51.4	mg/l	16887-00-6
U-4S	04/01/2019	Fluoride	< 0.10	mg/l	16984-48-8
U-4S	09/25/2019	Fluoride	< 0.10	mg/l	16984-48-8
U-4S	04/01/2019	pH	7.6	pH UNITS	PH
U-4S	09/25/2019	pH	7.4	pH UNITS	PH
U-4S	04/01/2019	Sulfate as SO4	10.4	mg/l	14808-79-8
U-4S	09/25/2019	Sulfate as SO4	10.3	mg/l	14808-79-8
U-4S	04/01/2019	Total Dissolved Solids	449	mg/l	TDS
U-4S	09/25/2019	Total Dissolved Solids	317	mg/l	TDS
U-5D	04/01/2019	Boron	< 0.020	mg/l	7440-42-8
U-5D	09/25/2019	Boron	< 0.020	mg/l	7440-42-8
U-5D	04/01/2019	Calcium	86.8	mg/l	7440-70-2
U-5D	09/25/2019	Calcium	88.3	mg/l	7440-70-2
U-5D	04/01/2019	Chloride	27.9	mg/l	16887-00-6
U-5D	09/25/2019	Chloride	25.8	mg/l	16887-00-6
U-5D	04/01/2019	Fluoride	0.075	mg/l	16984-48-8
U-5D	09/25/2019	Fluoride	< 0.10	mg/l	16984-48-8
U-5D	04/01/2019	pH	7.7	pH UNITS	PH
U-5D	09/25/2019	pH	7.5	pH UNITS	PH
U-5D	04/01/2019	Sulfate as SO4	29.5	mg/l	14808-79-8
U-5D	09/25/2019	Sulfate as SO4	26.4	mg/l	14808-79-8
U-5D	04/01/2019	Total Dissolved Solids	385	mg/l	TDS
U-5D	09/25/2019	Total Dissolved Solids	419	mg/l	TDS
U-5S	04/01/2019	Boron	0.022	mg/l	7440-42-8
U-5S	09/25/2019	Boron	< 0.020	mg/l	7440-42-8
U-5S	04/01/2019	Calcium	91.9	mg/l	7440-70-2
U-5S	09/25/2019	Calcium	95.4	mg/l	7440-70-2
U-5S	04/01/2019	Chloride	43.2	mg/l	16887-00-6
U-5S	09/25/2019	Chloride	67.1	mg/l	16887-00-6
U-5S	04/01/2019	Fluoride	0.079	mg/l	16984-48-8
U-5S	09/25/2019	Fluoride	< 0.10	mg/l	16984-48-8
U-5S	04/01/2019	pH	7.6	pH UNITS	PH
U-5S	09/25/2019	pH	7.6	pH UNITS	PH
U-5S	04/01/2019	Sulfate as SO4	25.9	mg/l	14808-79-8
U-5S	09/25/2019	Sulfate as SO4	20.1	mg/l	14808-79-8
U-5S	04/01/2019	Total Dissolved Solids	409	mg/l	TDS
U-5S	09/25/2019	Total Dissolved Solids	453	mg/l	TDS

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

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
D-1D	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-1D	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-1D	09/26/2019	Barium	0.048	mg/l	7440-39-3
D-1D	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-1D	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-1D	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-1D	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-1D	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-1D	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-1D	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-1D	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-1D	09/26/2019	Radium (226)	< 1.00	pci/l	13982-63-3
D-1D	09/26/2019	Radium 228	1.16	pci/l	15262-20-1
D-1D	09/26/2019	Radium 226/228	1.16	pci/l	--
D-1D	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-1D	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-1S	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-1S	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-1S	09/26/2019	Barium	0.056	mg/l	7440-39-3
D-1S	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-1S	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-1S	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-1S	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-1S	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-1S	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-1S	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-1S	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-1S	09/26/2019	Radium (226)	0.362	pci/l	13982-63-3
D-1S	09/26/2019	Radium 228	0.695	pci/l	15262-20-1
D-1S	09/26/2019	Radium 226/228	1.057	pci/l	--
D-1S	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-1S	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-2D	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-2D	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-2D	09/26/2019	Barium	0.048	mg/l	7440-39-3
D-2D	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-2D	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-2D	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-2D	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-2D	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-2D	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-2D	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-2D	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-2D	09/26/2019	Radium (226)	0.262	pci/l	13982-63-3
D-2D	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-2D	09/26/2019	Radium 226/228	0.262	pci/l	--
D-2D	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-2D	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-2S	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
D-2S	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-2S	09/26/2019	Barium	0.048	mg/l	7440-39-3
D-2S	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-2S	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-2S	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-2S	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-2S	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-2S	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-2S	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-2S	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-2S	09/26/2019	Radium (226)	< 1.00	pci/l	13982-63-3
D-2S	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-2S	09/26/2019	Radium 226/228	<1.00	pci/l	--
D-2S	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-2S	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-3D	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
D-3D	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-3D	09/25/2019	Barium	0.048	mg/l	7440-39-3
D-3D	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-3D	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-3D	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-3D	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-3D	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
D-3D	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
D-3D	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
D-3D	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-3D	09/25/2019	Radium (226)	< 1.00	pci/l	13982-63-3
D-3D	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-3D	09/26/2019	Radium 226/228	< 1.00	pci/l	--
D-3D	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
D-3D	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
D-3S	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
D-3S	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-3S	09/25/2019	Barium	0.060	mg/l	7440-39-3
D-3S	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-3S	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-3S	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-3S	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-3S	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
D-3S	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
D-3S	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
D-3S	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-3S	09/25/2019	Radium (226)	0.285	pci/l	13982-63-3
D-3S	09/25/2019	Radium 228	< 1.0	pci/l	15262-20-1
D-3S	09/26/2019	Radium 226/228	0.285	pci/l	--
D-3S	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
D-3S	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
D-4D	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-4D	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
D-4D	09/26/2019	Barium	0.065	mg/l	7440-39-3
D-4D	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-4D	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-4D	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-4D	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-4D	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-4D	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-4D	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-4D	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-4D	09/26/2019	Radium (226)	0.274	pci/l	13982-63-3
D-4D	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-4D	09/26/2019	Radium 226/228	0.274	pci/l	--
D-4D	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-4D	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-4S	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-4S	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-4S	09/26/2019	Barium	0.072	mg/l	7440-39-3
D-4S	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-4S	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-4S	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-4S	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-4S	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-4S	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-4S	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-4S	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-4S	09/26/2019	Radium (226)	0.227	pci/l	13982-63-3
D-4S	09/26/2019	Radium 228	1.23	pci/l	15262-20-1
D-4S	09/26/2019	Radium 226/228	1.457	pci/l	--
D-4S	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-4S	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-5D	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
D-5D	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-5D	09/25/2019	Barium	0.052	mg/l	7440-39-3
D-5D	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-5D	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-5D	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-5D	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-5D	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
D-5D	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
D-5D	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
D-5D	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-5D	09/25/2019	Radium (226)	0.306	pci/l	13982-63-3
D-5D	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-5D	09/26/2019	Radium 226/228	0.306	pci/l	--
D-5D	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
D-5D	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
D-5S2	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
D-5S2	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-5S2	09/25/2019	Barium	0.080	mg/l	7440-39-3

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
D-5S2	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-5S2	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-5S2	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-5S2	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-5S2	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
D-5S2	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
D-5S2	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
D-5S2	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-5S2	09/25/2019	Radium (226)	0.235	pci/l	13982-63-3
D-5S2	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-5S2	09/26/2019	Radium 226/228	0.235	pci/l	--
D-5S2	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
D-5S2	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
D-7	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-7	09/26/2019	Arsenic	**7.3**	ug/l	7440-38-2
D-7	09/26/2019	Barium	**0.21**	mg/l	7440-39-3
D-7	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-7	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-7	09/26/2019	Chromium	0.038	mg/l	7440-47-3
D-7	09/26/2019	Cobalt	**16.7**	ug/l	7440-48-4
D-7	09/26/2019	Lead	0.011	mg/l	7439-92-1
D-7	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-7	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-7	09/26/2019	Molybdenum	1.2	ug/l	7439-98-7
D-7	09/26/2019	Radium (226)	2.04	pci/l	13982-63-3
D-7	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-7	09/26/2019	Radium 226/228	2.04	pci/l	--
D-7	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-7	09/26/2019	Thallium	0.91	ug/l	7440-28-0
D-8	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-8	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-8	09/26/2019	Barium	0.068	mg/l	7440-39-3
D-8	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7
D-8	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-8	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-8	09/26/2019	Cobalt	< 0.30	ug/l	7440-48-4
D-8	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-8	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-8	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-8	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-8	09/26/2019	Radium (226)	< 1.00	pci/l	13982-63-3
D-8	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-8	09/26/2019	Radium 226/228	< 1.00	pci/l	--
D-8	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-8	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
D-9	09/26/2019	Antimony	< 1.0	ug/l	7440-36-0
D-9	09/26/2019	Arsenic	< 1.0	ug/l	7440-38-2
D-9	09/26/2019	Barium	0.049	mg/l	7440-39-3
D-9	09/26/2019	Beryllium	< 0.70	ug/l	7440-41-7

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
D-9	09/26/2019	Cadmium	< 0.50	ug/l	7440-43-9
D-9	09/26/2019	Chromium	< 0.0040	mg/l	7440-47-3
D-9	09/26/2019	Cobalt	0.30	ug/l	7440-48-4
D-9	09/26/2019	Lead	< 0.010	mg/l	7439-92-1
D-9	09/26/2019	Lithium	< 0.030	mg/l	7439-93-2
D-9	09/26/2019	Mercury	< 0.20	ug/l	7439-97-6
D-9	09/26/2019	Molybdenum	< 1.0	ug/l	7439-98-7
D-9	09/26/2019	Radium (226)	< 1.00	pci/l	13982-63-3
D-9	09/26/2019	Radium 228	< 1.00	pci/l	15262-20-1
D-9	09/26/2019	Radium 226/228	< 1.00	pci/l	--
D-9	09/26/2019	Selenium	< 1.0	ug/l	7782-49-2
D-9	09/26/2019	Thallium	< 0.20	ug/l	7440-28-0
U-4D	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
U-4D	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
U-4D	09/25/2019	Barium	0.042	mg/l	7440-39-3
U-4D	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
U-4D	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
U-4D	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
U-4D	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
U-4D	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
U-4D	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
U-4D	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
U-4D	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
U-4D	09/25/2019	Radium (226)	0.217	pci/l	13982-63-3
U-4D	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
U-4D	09/26/2019	Radium 226/228	0.217	pci/l	--
U-4D	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
U-4D	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
U-4S	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
U-4S	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
U-4S	09/25/2019	Barium	0.032	mg/l	7440-39-3
U-4S	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
U-4S	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
U-4S	09/25/2019	Chromium	0.0076	mg/l	7440-47-3
U-4S	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
U-4S	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
U-4S	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
U-4S	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
U-4S	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
U-4S	09/25/2019	Radium (226)	< 1.00	pci/l	13982-63-3
U-4S	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
U-4S	09/26/2019	Radium 226/228	< 1.00	pci/l	--
U-4S	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
U-4S	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
U-5D	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
U-5D	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
U-5D	09/25/2019	Barium	0.057	mg/l	7440-39-3
U-5D	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
U-5D	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Units	CAS #
U-5D	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
U-5D	09/25/2019	Cobalt	< 0.30	ug/l	7440-48-4
U-5D	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
U-5D	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
U-5D	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
U-5D	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
U-5D	09/25/2019	Radium (226)	0.241	pci/l	13982-63-3
U-5D	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
U-5D	09/26/2019	Radium 226/228	0.241	pci/l	--
U-5D	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
U-5D	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0
U-5S	09/25/2019	Antimony	< 1.0	ug/l	7440-36-0
U-5S	09/25/2019	Arsenic	< 1.0	ug/l	7440-38-2
U-5S	09/25/2019	Barium	0.067	mg/l	7440-39-3
U-5S	09/25/2019	Beryllium	< 0.70	ug/l	7440-41-7
U-5S	09/25/2019	Cadmium	< 0.50	ug/l	7440-43-9
U-5S	09/25/2019	Chromium	< 0.0040	mg/l	7440-47-3
U-5S	09/25/2019	Cobalt	0.36	ug/l	7440-48-4
U-5S	09/25/2019	Lead	< 0.010	mg/l	7439-92-1
U-5S	09/25/2019	Lithium	< 0.030	mg/l	7439-93-2
U-5S	09/25/2019	Mercury	< 0.20	ug/l	7439-97-6
U-5S	09/25/2019	Molybdenum	< 1.0	ug/l	7439-98-7
U-5S	09/25/2019	Radium (226)	0.213	pci/l	13982-63-3
U-5S	09/25/2019	Radium 228	< 1.00	pci/l	15262-20-1
U-5S	09/26/2019	Radium 226/228	0.213	pci/l	--
U-5S	09/25/2019	Selenium	< 1.0	ug/l	7782-49-2
U-5S	09/25/2019	Thallium	< 0.20	ug/l	7440-28-0

Results in mg/l (milligrams per liter) and ug/l (micrograms per liter)
Bold = Indicates concentration above Background Threshold Value

2019 CCR Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 4

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-1D	4/2/19 2:50 PM	1	6.91	829	10.20
D-1D	4/2/19 3:00 PM	1	6.92	829	10.27
D-1D	4/2/19 3:10 PM	1	6.94	828	10.29
D-1D	4/2/19 3:20 PM	1	6.92	830	10.28
D-1D	9/26/19 8:25 AM	1	8.67	732	11.62
D-1D	9/26/19 8:35 AM	1	8.69	731	11.60
D-1D	9/26/19 8:45 AM	1	8.84	734	11.59
D-1D	9/26/19 8:55 AM	1	8.86	734	11.59
D-1S	4/2/19 3:05 PM	1	7.14	715	8.96
D-1S	4/2/19 3:10 PM	1	6.63	912	10.67
D-1S	4/2/19 3:15 PM	1	6.61	915	10.79
D-1S	4/2/19 3:20 PM	1	6.62	915	10.74
D-1S	9/26/19 8:40 AM	1	8.18	707	12.09
D-1S	9/26/19 8:45 AM	1	8.19	826	11.78
D-1S	9/26/19 8:50 AM	1	8.37	819	11.77
D-1S	9/26/19 8:55 AM	1	8.37	820	11.73
D-2D	4/3/19 7:35 AM	1	6.95	858	9.26
D-2D	4/3/19 8:05 AM	1	7.01	857	9.28
D-2D	4/3/19 8:35 AM	1	7.02	858	9.28
D-2D	4/3/19 9:05 AM	1	7.02	858	9.27
D-2D	9/26/19 9:10 AM	1	5.91	769	10.55
D-2D	9/26/19 9:20 AM	1	5.93	769	10.55
D-2D	9/26/19 9:30 AM	1	5.96	769	10.56
D-2D	9/26/19 9:40 AM	1	5.98	769	10.55
D-2S	4/3/19 8:35 AM	1	7.30	902	8.36
D-2S	4/3/19 8:45 AM	1	6.86	904	9.18
D-2S	4/3/19 8:55 AM	1	6.94	910	9.36
D-2S	4/3/19 9:05 AM	1	6.58	906	9.42
D-2S	9/26/19 9:25 AM	1	8.01	821	11.06
D-2S	9/26/19 9:30 AM	1	6.62	837	10.89
D-2S	9/26/19 9:35 AM	1	6.86	837	10.90
D-2S	9/26/19 9:40 AM	1	6.86	838	10.91
D-3D	4/2/19 12:40 AM	1	6.80	952	9.36
D-3D	4/2/19 1:00 PM	1	6.73	951	9.34
D-3D	4/2/19 1:20 PM	1	6.84	951	9.35
D-3D	4/2/19 1:40 PM	1	6.76	951	9.34
D-3D	9/25/19 12:55 PM	1	8.33	888	10.73
D-3D	9/25/19 1:05 PM	1	8.34	889	10.74
D-3D	9/25/19 1:15 PM	1	8.35	888	10.72
D-3D	9/25/19 1:25 PM	1	8.35	888	10.75
D-3S	4/2/19 1:10 PM	1	6.90	1040	9.92
D-3S	4/2/19 1:20 PM	1	6.74	1050	9.65
D-3S	4/2/19 1:30 PM	1	6.81	1060	9.65
D-3S	4/2/19 1:40 PM	1	6.55	1050	9.50
D-3S	9/25/19 1:10 PM	1	10.72	979	12.21
D-3S	9/25/19 1:15 PM	1	7.33	1030	10.93
D-3S	9/25/19 1:20 PM	1	7.65	1030	10.87
D-3S	9/25/19 1:25 PM	1	7.68	1030	10.88

Table 4

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-4D	4/3/19 9:50 AM	1	6.83	904	10.16
D-4D	4/3/19 10:05 AM	1	6.82	905	10.19
D-4D	4/3/19 10:20 AM	1	6.83	903	10.18
D-4D	4/3/19 10:35 AM	1	6.82	902	10.17
D-4D	9/26/19 9:50 AM	1	7.68	808	11.38
D-4D	9/26/19 10:00 AM	1	7.68	808	11.38
D-4D	9/26/19 10:10 AM	1	7.67	808	11.38
D-4D	9/26/19 10:20 AM	1	7.67	807	11.37
D-4S	4/3/19 10:10 AM	1	7.15	831	9.28
D-4S	4/3/19 10:17 AM	1	6.92	927	6.92
D-4S	4/3/19 10:25 AM	1	6.67	927	6.67
D-4S	4/3/19 10:35 AM	1	6.75	927	6.75
D-4S	9/26/19 10:05 AM	1	7.09	818	12.15
D-4S	9/26/19 10:10 AM	1	7.11	834	11.67
D-4S	9/26/19 10:15 AM	1	7.31	831	11.50
D-4S	9/26/19 10:20 AM	1	7.36	832	11.48
D-5D	4/2/19 11:25 AM	1	6.77	912	9.32
D-5D	4/2/19 11:40 AM	1	6.91	909	9.31
D-5D	4/2/19 11:55 AM	1	6.67	911	9.32
D-5D	4/2/19 12:10 PM	1	6.77	910	9.30
D-5D	9/25/19 12:15 PM	1	9.36	6	10.65
D-5D	9/25/19 12:25 PM	1	9.27	3	10.56
D-5D	9/25/19 12:35 PM	1	9.25	15	10.67
D-5D	9/25/19 12:45 PM	1	9.27	3	10.52
D-5S2	4/1/19 11:40 AM	1	7.00	1080	9.38
D-5S2	4/1/19 11:50 AM	1	6.33	1100	9.38
D-5S2	4/1/19 12:00 PM	1	6.79	1100	9.42
D-5S2	4/1/19 12:10 AM	1	6.55	1100	9.41
D-5S2	9/25/19 12:25 PM	1	9.54	42	10.69
D-5S2	9/25/19 12:30 PM	1	9.64	17	10.64
D-5S2	9/25/19 12:35 PM	1	9.38	11	10.48
D-5S2	9/25/19 12:40 PM	1	9.37	11	10.70
D-7	4/3/19 11:35 AM	1	7.18	908	9.34
D-7	4/3/19 11:40 AM	1	6.91	898	9.32
D-7	4/3/19 11:45 AM	1	7.07	916	9.30
D-7	4/3/19 11:50 AM	1	7.07	915	9.30
D-7	9/26/19 8:00 AM	1	9.11	1280	11.15
D-7	9/26/19 8:05 AM	1	9.11	1280	11.16
D-7	9/26/19 8:10 AM	1	9.11	1280	11.16
D-7	9/26/19 8:15 AM	1	9.11	1280	11.16
D-8	4/3/19 12:20 PM	1	8.26	637	10.00
D-8	4/3/19 12:20 PM	1	7.12	768	9.54
D-8	4/3/19 12:30 PM	1	7.02	904	9.33
D-8	4/3/19 12:40 PM	1	6.99	882	9.26
D-8	4/3/19 12:50 PM	1	7.00	899	9.26
D-8	9/26/19 10:40 AM	1	8.05	769	11.11
D-8	9/26/19 10:45 AM	1	8.14	837	10.50
D-8	9/26/19 10:50 AM	1	8.41	835	10.45

2019 CCR Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 4

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-8	9/26/19 10:55 AM	1	8.49	834	10.39
D-9	4/3/19 12:45 PM	1	6.91	850	9.32
D-9	4/3/19 1:05 PM	1	6.90	864	9.88
D-9	4/3/19 1:25 PM	1	6.95	883	9.87
D-9	4/3/19 1:45 PM	1	6.87	898	9.88
D-9	9/26/19 11:10 AM	1	8.09	725	13.11
D-9	9/26/19 11:15 AM	1	5.83	747	11.80
D-9	9/26/19 11:20 AM	1	5.75	689	11.77
D-9	9/26/19 11:25 AM	1	5.75	689	11.78
U-4D	4/1/19 12:10 AM	1	6.50	555	8.84
U-4D	4/1/19 12:30 AM	1	6.55	565	8.84
U-4D	4/1/19 12:50 AM	1	6.58	634	8.83
U-4D	4/1/19 1:10 PM	1	6.81	764	8.81
U-4D	4/1/19 1:30 PM	1	6.85	794	8.81
U-4D	9/25/19 9:00 AM	1	7.07	787	9.84
U-4D	9/25/19 9:20 AM	1	7.05	786	9.78
U-4D	9/25/19 9:40 AM	1	7.04	786	9.77
U-4D	9/25/19 10:00 AM	1	7.05	786	9.77
U-4S	4/1/19 1:15 PM	1	6.78	968	9.78
U-4S	4/1/19 1:20 PM	1	6.46	978	9.43
U-4S	4/1/19 1:25 PM	1	6.45	979	9.43
U-4S	4/1/19 1:30 PM	1	6.44	979	9.39
U-4S	9/25/19 9:45 AM	1	7.41	632	11.33
U-4S	9/25/19 9:50 AM	1	7.10	627	13.04
U-4S	9/25/19 9:55 AM	1	7.07	625	13.63
U-4S	9/25/19 10:00 AM	1	7.07	625	13.65
U-5D	4/2/19 8:55 AM	1	6.99	825	9.12
U-5D	4/2/19 9:05 AM	1	7.00	825	9.16
U-5D	4/2/19 9:15 AM	1	7.01	824	9.21
U-5D	4/2/19 9:25 AM	1	6.98	824	9.24
U-5D	4/2/19 9:30 AM	1	7.02	824	9.28
U-5D	9/25/19 11:00 AM	1	8.63	743	10.57
U-5D	9/25/19 11:10 AM	1	8.50	743	10.58
U-5D	9/25/19 11:20 AM	1	8.50	743	10.57
U-5D	9/25/19 11:30 AM	1	8.50	743	10.58
U-5S	4/2/19 9:15 AM	1	6.66	889	10.12
U-5S	4/2/19 9:20 AM	1	6.30	876	10.42
U-5S	4/2/19 9:25 AM	1	6.28	875	10.46
U-5S	4/2/19 9:30 AM	1	6.38	877	10.47
U-5S	9/25/19 11:15 AM	1	8.12	361	12.17
U-5S	9/25/19 11:20 AM	1	8.16	496	11.10
U-5S	9/25/19 11:25 AM	1	7.79	649	11.02
U-5S	9/25/19 11:30 AM	1	7.79	700	11.03

Table 5

Background Threshold Values

Appendix III to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	0.150	mg/l	7440-42-8
Calcium	131	mg/l	7440-70-2
Chloride	83.5	mg/l	16887-00-6
Fluoride	0.250	mg/l	15984-48-8
pH	Lower 7.1 Upper 8.2	pH UNITS	PH
Sulfate as SO4	538	mg/l	14808-79-8
Total Dissolved Solids	705	mg/l	TDS

Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Antimony	1.0	ug/l	7440-36-0
Arsenic	1.6	ug/l	7440-38-2
Barium	1.1	mg/l	7440-39-3
Beryllium	0.7	ug/l	7440-41-7
Cadmium	1	ug/l	7440-43-9
Chromium	0.06	mg/l	7440-47-3
Cobalt	1.2	ug/l	7440-48-4
Lead	0.05	mg/l	7439-92-1
Lithium	0.030	mg/l	7439-93-2
Mercury	0.2	ug/l	7439-97-6
Molybdenum	1.2	ug/l	7439-98-7
Radium 226	2.04	pci/l	13982-63-3
Radium 228	1.3	pci/l	15262-20-1
Total Radium 226/228	3.34	pci/l	--
Selenium	2.1	ug/l	7782-49-2
Thallium	0.94	ug/l	7440-28-0

Appendix A – Field Data Sheets

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SK-B Basement
Project Number: 350507
Sampling Device: Dedicated Bladder Pump
Date: 4/18/19
Well ID: V-45

Tubing Diameter (ID): 2 inches
Depth to Water: 11.12 ft, TOC
Depth to Bottom of Well: 34.36 ft, TOC
Feet of Water in Well: 23.24 ft
Volume of Water in Well: 3.8 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	~~pH (s.u.)~~ Temp	Specific Conductance (µ mhos)	~~Temperature (°F)~~ pH °C	Purge Rate (L/min)
1	11.13	9.78	968	6.78	1
5	11.20	9.47	978	6.46	1
10	11.22	9.43	979	6.45	1
15	11.22	9.39	979	6.44	1

Purge Start Time: 13:30 Purge End Time: 13:45 Total Volume Purged: 11.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schubert

Weather Conditions: 43°F, cloudy 0-5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Basement
Project Number: 3505057
Sampling Device: Dedicated Bladder Pump
Date: 4/1/19
Well ID: V-4D

Tubing Diameter (ID): 2 inches
Depth to Water: 18.99 ft, TOC
Depth to Bottom of Well: 89.2 ft, TOC
Feet of Water in Well: 70.21 ft
Volume of Water in Well: 11.4 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (~~uS/cm~~ mS)	Temperature (°F) °C	Purge Rate (L/min)
1	18.99	6.50	555	8.94	1
20	19.07	6.55	565	8.94	1
40	19.12	6.50	634	8.93	1
60	19.12	6.31	764	8.81	1
80	19.12	6.95	794	8.81	1

Purge Start Time: 13:30 Purge End Time: 14:40 Total Volume Purged: 35.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: A. Schlegel

Weather Conditions: 43°F, cloudy, 0-5 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Redmond
Project Number: 350505.7
Sampling Device: Dedicated Bladder Pump
Date: 4/2/19
Well ID: U-55

Tubing Diameter (ID): 2 inches
Depth to Water: 22.22 ft, TOC
Depth to Bottom of Well: 42.5 ft, TOC
Feet of Water in Well: 20.28 ft
Volume of Water in Well: 3.3 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (uS/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	22.23	6.66	889	10.12	1
5	22.27	6.30	876	10.42	1
10	22.27	6.28	875	10.46	1
15	22.27	6.58	877	10.47	1

Purge Start Time: 9:30 Purge End Time: 9:50 Total Volume Purged: 10.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Sunlogd

Weather Conditions: 38°F, sunny, 5-10 mph SW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rockaway	Tubing Diameter (ID):	2	inches
Project Number:	350505	Depth to Water:	28.25	ft, TOC
Sampling Device:	Dedicated Bladder	Depth to Bottom of Well:	101.54	ft, TOC
Date:	4/2/19	Feet of Water in Well:	73.29	ft
Well ID:	U-5D	Volume of Water in Well:	12.0	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	28.25	6.99	925	9.12	1
10	28.27	7.00	925	9.16	1
20	28.27	7.01	924	9.21	1
30	28.29	6.98	924	9.24	1
35	28.27	7.02	924	9.25	1

Purge Start Time: 9:30 Purge End Time: 10:10 Total Volume Purged: 36 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Enbgel

Weather Conditions: 38°F, mostly sunny, 5-10 mph SW

Comments: DUP-1

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLFS Rosemount		Tubing Diameter (ID):	2	inches
Project Number:	3505057		Depth to Water:	106.98	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	121.91	ft, TOC
Date:	4/1/19		Feet of Water in Well:	24.93	ft
Well ID:	D-352		Volume of Water in Well:	4.0	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	106.98	7.00	1,040	9.38	1
10	107.00	6.33	1,100	9.38	1
20	107.02	6.79	1,100	9.42	1
30	107.02	6.55	1,100	9.41	1

Purge Start Time: 12:10 Purge End Time: 12:44 Total Volume Purged: 120 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlagel

Weather Conditions: 48°F, partly cloudy W 10-15 mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemont
Project Number: 3505057
Sampling Device: Dedicated Bladder Pump
Date: 4/2/19
Well ID: D-5D

Tubing Diameter (ID): 2 inches
Depth to Water: 114.70 ft, TOC
Depth to Bottom of Well: ~~157~~ 157.16 ft, TOC
Feet of Water in Well: 42.40 ft
Volume of Water in Well: 6.9 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos)	Temperature (°F) °C	Purge Rate (L/min)
1	114.76	6.77	912	9.32	1
~~15~~	114.72	6.91	909	9.31	1
30	114.72	6.67	911	9.32	1
45	114.22	6.77	910	9.30	1

Purge Start Time: 12:10 Purge End Time: 12:55 Total Volume Purged: 21.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Senkpiel

Weather Conditions: 46° partly cloudy, 10-15 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 3505057
Sampling Device: Dedicated Bladder Pump
Date: 4/2/19
Well ID: D-35

Tubing Diameter (ID): 2 inches
Depth to Water: 107.94 ft, TOC
Depth to Bottom of Well: 135.13 ft, TOC
Feet of Water in Well: 27.19 ft
Volume of Water in Well: 4.4 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (V / mho)	Temperature (°F) °C	Purge Rate (L/min)
1	107.94	6.50	1,040	9.42	1
10	108.00	6.74	1,050	9.65	1
20	108.00	6.81	1,050	9.65	1
30	108.00	6.55	1,050	9.58	1

Purge Start Time: 13:40 Purge End Time: 14:15 Total Volume Purged: 17.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schabel

Weather Conditions: 46°F, cloudy, 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Basement	Tubing Diameter (ID):	2	inches
Project Number:	3505057	Depth to Water:	108.76	ft, TOC
Sampling Device:	Peristaltic Bladder Pump	Depth to Bottom of Well:	155.50	ft, TOC
Date:	4/2/15	Feet of Water in Well:	47.0	ft
Well ID:	D-3D	Volume of Water in Well:	7.7	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (U / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	108.76	6.80	952	9.36	1
20	108.80	6.73	951	9.34	1
40	108.80	6.82	951	9.35	1
60	108.80	6.76	951	9.34	1

Purge Start Time: 13:40 Purge End Time: 14:40 Total Volume Purged: 23.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 46°F, cloudy, 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemont		Tubing Diameter (ID):	2	inches
Project Number:	3505057		Depth to Water:	120.60	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	135.97	ft, TOC
Date:	4/2/19		Feet of Water in Well:	15.37	ft
Well ID:	D-15		Volume of Water in Well:	2.5	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u / hos)	Temperature (°F) °C	Purge Rate (L/min)
1	120.60	7.14	715	8.96	1
5	120.65	6.63	912	10.67	1
10	120.65	6.61	915	10.79	1
15	120.69	6.62	918	10.74	1

Purge Start Time: 15:20 Purge End Time: 15:40 Total Volume Purged: 2.5 gal

Approximate Purge Rate: 1L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 47°F, cloudy, 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	GKB Rosemont	Tubing Diameter (ID):	2	inches
Project Number:	3505057	Depth to Water:	117.25	ft, TOC
Sampling Device:	Dedicated Bladder Pump	Depth to Bottom of Well:	164.5	ft, TOC
Date:	4/2/19	Feet of Water in Well:	47.25	ft
Well ID:	D-1D	Volume of Water in Well:	7.7	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ l/cm)	Temperature (°F)	Purge Rate (L/min)
1	117.25	6.91	929	10.28	1
10	117.27	6.92	926	10.27	1
20	117.27	6.94	928	10.29	1
30	117.27	6.92	930	10.28	1

Purge Start Time: 15:20 Purge End Time: 15:00 Total Volume Purged: 23.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlegel

Weather Conditions: 47°F, cloudy 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLB Rosemont	Tubing Diameter (ID):	2	inches
Project Number:	3505057	Depth to Water:	115.62	ft, TOC
Sampling Device:	Dedicated Bladder Pump	Depth to Bottom of Well:	134.78	ft, TOC
Date:	4/3/19	Feet of Water in Well:	19.16	ft
Well ID:	D-25	Volume of Water in Well:	3.1	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	115.62	7.30	902	8.36	1
10	115.65	6.36	904	9.18	1
20	115.68	6.94	910	9.36	1
30	115.69	6.58	906	9.42	1

Purge Start Time: 9:05 Purge End Time: 9:40 Total Volume Purged: 9.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Snodgrass

Weather Conditions: 35°F, sunny, 0-5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 3505057
Sampling Device: Dedicated Bladder Pump
Date: 4/3/19
Well ID: D-2D

Tubing Diameter (ID): 2 inches
Depth to Water: 114.50 ft, TOC
Depth to Bottom of Well: 163.98 ft, TOC
Feet of Water in Well: 49.48 ft
Volume of Water in Well: 8.1 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	114.50	6.95	858	9.26	1
30	114.52	7.01	857	9.28	1
60	114.53	7.02	858	9.28	1
90	114.53	7.02	858	9.27	1

Purge Start Time: 9:05 Purge End Time: 10:30 Total Volume Purged: 245 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Sullagel

Weather Conditions: 38°F, sunny, 0-5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLCB Redevelopment	Tubing Diameter (ID):	3	inches
Project Number:	3505057	Depth to Water:	102.93	ft, TOC
Sampling Device:	Dedicated Bladder Pump	Depth to Bottom of Well:	120.40	ft, TOC
Date:	4/3/19	Feet of Water in Well:	17.47	ft
Well ID:	D-43	Volume of Water in Well:	2.8	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ/mhos)	Temperature (°F) C	Purge Rate (L/min)
1	102.93	7.15	831	9.28	1
7	102.95	6.92	927	6.92	1
15	102.97	6.67	927	6.67	1
25	102.97	6.75	929	6.75	1

Purge Start Time: 10:35 Purge End Time: 11:10 Total Volume Purged: 85 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 45°F, sunny, 5–10 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLAC Basement		Tubing Diameter (ID):	2	inches
Project Number:	350507		Depth to Water:	103.14	ft, TOC
Sampling Device:	Peristaltic Bladder Pump		Depth to Bottom of Well:	139.7	ft, TOC
Date:	4/3/19		Feet of Water in Well:	36.56	ft
Well ID:	D-40		Volume of Water in Well:	6.0	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (U Ambos)	Temperature (°F) °C	Purge Rate (L/min)
1	103.14	6.93	904	10.16	1
15	103.16	6.92	905	10.19	1
30	103.17	6.93	903	10.18	1
45	103.17	6.92	902	10.17	1

Purge Start Time: 10:35 Purge End Time: 11:30 Total Volume Purged: 18.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Sabol

Weather Conditions: 45°F, sunny, 5-10 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemont		Tubing Diameter (ID):	2	inches
Project Number:	3505057		Depth to Water:	102.05	ft, TOC
Sampling Device:	DIS Portable Bailer		Depth to Bottom of Well:	107.4	ft, TOC
Date:	4/3/19		Feet of Water in Well:	5.35	ft
Well ID:	D-7		Volume of Water in Well:	0.87	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (U / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	102.05	7.18	908	9.34	1
5	103.35	6.91	898	9.32	1
10	105.58	7.07	916	9.30	1
15	106.27	7.07	918	9.30	1

Purge Start Time: 11:50 Purge End Time: 12:10 Total Volume Purged: 1.5 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Santos

Weather Conditions: 46°F, sunny, 5–9 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLB Rosemount		Tubing Diameter (ID):	2	inches
Project Number:	350307		Depth to Water:	106.78	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	130.1	ft, TOC
Date:	4/27/18		Feet of Water in Well:	23.32	ft
Well ID:	D-8		Volume of Water in Well:	3.8	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	106.78	7.12	768	9.54	1
10	107.13	7.02	904	9.53	1
20	107.27	6.99	882	9.26	1
30	107.27	7.00	899	9.26	1

Purge Start Time: 12:50 Purge End Time: 13:25 Total Volume Purged: 11.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N-Schlegel

Weather Conditions: 40°F, sunny, 5-10mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Fleetmart	Tubing Diameter (ID):	2	inches
Project Number:	3505057	Depth to Water:	96.30	ft, TOC
Sampling Device:	Redi-Flo2 Bladder Pump	Depth to Bottom of Well:	118.5	ft, TOC
Date:	4/3/14	Feet of Water in Well:	22.2	ft
Well ID:	D-9	Volume of Water in Well:	3.6	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhar)	Temperature (°F) °C	Purge Rate (L/min)
1	96.30	6.91	850	9.52	1
20	96.78	6.90	864	9.88	1
40	97.04	6.95	883	9.87	1
60	97.04	6.97	878	9.92	1

Purge Start Time: 13:45 Purge End Time: 14:45 Total Volume Purged: 11.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: K. Schlegel

Weather Conditions: 50°F, partly cloudy, 5-10 NW

Comments: DUP-2

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 350
Sampling Device: Dedicated Bladder pump
Date: 9/25/19
Well ID: V-45

Tubing Diameter (ID): 2 inches
Depth to Water: 10.73 ft, TOC
Depth to Bottom of Well: 34.36 ft, TOC
Feet of Water in Well: 23.63 ft
Volume of Water in Well: 3.85 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhe)	Temperature (°F) °C	Purge Rate (L/min)
1	10.75	7.41	652	11.33	1
5	10.76	7.10	627	13.04	1
10	10.76	7.07	625	13.63	1
15	10.76	7.07	625	13.65	1

Purge Start Time: 10:00 Purge End Time: 10:15 Total Volume Purged: 4.0 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: W. Schlagel
Weather Conditions: 59°F Sunny 5-18 mph W
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemount		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	17.20	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	89.2	ft, TOC
Date:	9/25/19		Feet of Water in Well:	71.9	ft
Well ID:	V-4D		Volume of Water in Well:	11.72	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (V / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	17.28	7.07	787	9.84	1
20	17.26	7.05	786	9.78	1
40	17.26	7.04	786	9.77	1
60	17.26	7.05	786	9.77	1

Purge Start Time: 10:00 Purge End Time: 11:00 Total Volume Purged: 12.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlagel

Weather Conditions: 59°F Sunny 5–10 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Basement
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/25/19
Well ID: W-55

Tubing Diameter (ID): 2 inches
Depth to Water: 21.74 ft, TOC
Depth to Bottom of Well: 42.5 ft, TOC
Feet of Water in Well: 20.76 ft
Volume of Water in Well: ~~38~~ 3.38 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	21.76	8.12	361	12.17	1
5	21.78	8.16	496	11.10	1
10	21.78	7.79	649	11.02	1
15	21.78	7.79	700	11.03	1

Purge Start Time: 11:30 Purge End Time: 11:45 Total Volume Purged: 40 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schlagel

Weather Conditions: 63 °F 10 – 15 mph W sunny

Comments: DUP 1 collected

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemount		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	26.56	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	101.54	ft, TOC
Date:	9/25/19		Feet of Water in Well:	74.98	ft
Well ID:	U-5D		Volume of Water in Well:	12.22	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u /mhos)	Temperature (°F) %	Purge Rate (L/min)
1	101.56	8.63	743	10.57	1
10	101.56	8.50	743	10.58	1
20	101.56	8.50	743	10.57	1
30	101.56	8.50	743	10.58	1

Purge Start Time: 11:30 Purge End Time: 12:00 Total Volume Purged: 13.0 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Schlagel

Weather Conditions: 63°F, Sunny 10 – 15 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/ 11/19
Well ID: D-552

Tubing Diameter (ID): 1 inches
Depth to Water: 104.50 ft, TOC
Depth to Bottom of Well: 121.83 ft, TOC
Feet of Water in Well: 7.82 ft
Volume of Water in Well: 12.33 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ /mhos)	Temperature (°F)	Purge Rate (L/min)
1	104.50	9.54	42	16.69	1
5	104.52	9.64	17	10.64	1
10	104.53	9.38	11	10.48	1
15	104.53	9.37	11	10.70	1

Purge Start Time: 12:40 Purge End Time: 13:00 Total Volume Purged: 3.0 gal
Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schlagel
Weather Conditions: 63 °F, 10—15 mph W mostly sunny
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemont		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	112.14	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	157.10	ft, TOC
Date:	9/19		Feet of Water in Well:	7.33	ft
Well ID:	D-5D		Volume of Water in Well:	44.96	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ /mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	112.14	9.36	6	10.85	1
10	112.16	9.27	3	10.56	1
20	112.18	9.25	15	10.67	1
30	112.18	9.27	3	10.52	1

Purge Start Time: 12:45 Purge End Time: 13:15 Total Volume Purged: 8.0 gal

Approximate Purge Rate: 1L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 63 °F, 10 – 15 mph W mostly sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/25/14
Well ID: D-35

Tubing Diameter (ID): 2 inches
Depth to Water: 105.39 ft, TOC
Depth to Bottom of Well: 135.13 ft, TOC
Feet of Water in Well: 29.75 ft
Volume of Water in Well: 47.85 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u mho)	Temperature (°F) C.	Purge Rate (L/min)
1	105.38	10.72	979	12.21	1
~~5~~	105.40	~~10~~ 7.33	1,030	10.93	1
~~10~~	105.42	7.65	1,030	10.87	1
~~15~~	105.42	7.68	1,030	10.88	1

Purge Start Time: 13:25 Purge End Time: 13:40 Total Volume Purged: 5.0 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlegel
Weather Conditions: 65 °F 10 – 15 mph W mostly cloudy
Comments: Collect DUP 2.

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLB Rosemont		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	106.35	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	155.50	ft, TOC
Date:	9/25/19		Feet of Water in Well:	49.15	ft
Well ID:	D-3D		Volume of Water in Well:	8.0	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	106.35	8.33	888	10.73	1
10	106.37	8.34	889	10.74	1
20	106.39	8.35	888	10.72	1
30	106.35	8.35	888	10.75	1

Purge Start Time: 13:25 Purge End Time: 14:00 Total Volume Purged: 8.0 gal

Approximate Purge Rate: 1L/min. Purged/Sampled by: N. Schlegel

Weather Conditions: 65°F, 10 – 15 mph W, mostly sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Basement		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	99.52	ft, TOC
Sampling Device:	Disposable Bailer		Depth to Bottom of Well:	107.4	ft, TOC
Date:	9/26/19		Feet of Water in Well:	7.88	ft
Well ID:	D-7		Volume of Water in Well:	1.28	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ/mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	99.52	9.11	1,280	11.15	1
5	101.47	9.11	1,280	11.16	1
10	103.76	9.11	1,280	11.16	1
15	103.82	9.11	1,280	11.16	1

Purge Start Time: 8:15 Purge End Time: 8:30 Total Volume Purged: 1.5 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schlagel

Weather Conditions: 49°F, sunny 0–5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/ /19
Well ID: D-15

Tubing Diameter (ID): 2 inches
Depth to Water: 118.00 ft, TOC
Depth to Bottom of Well: 135.97 ft, TOC
Feet of Water in Well: 17.97 ft
Volume of Water in Well: 2.93 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	118.00	8.18	707	12.09	1
5	118.02	8.19	826	11.78	1
10	118.04	8.37	819	11.77	1
15	118.04	8.37	820	11.73	1

Purge Start Time: 8:55 Purge End Time: 9:10 Total Volume Purged: 3.0 gal

Approximate Purge Rate: 1L/min Purged/Sampled by: N. Senlagel

Weather Conditions: 49°F, 0-5 mph W sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosmont
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/19
Well ID: D-1D

Tubing Diameter (ID): 2 inches
Depth to Water: 114.97 ft, TOC
Depth to Bottom of Well: 164.5 ft, TOC
Feet of Water in Well: 49.53 ft
Volume of Water in Well: 8.07 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u / uhos)	Temperature (°F) °C	Purge Rate (L/min)
1	114.97	8.67	732	11.62	1
10	114.99	8.89	731	11.60	1
20	115.01	8.84	734	11.59	1
30	115.01	8.86	734	11.59	1

Purge Start Time: 8:55 Purge End Time: 9:35 Total Volume Purged: 8.5 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schlagel

Weather Conditions: 49 °F, 0 – 5 mph W sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/ /19
Well ID: D-25

Tubing Diameter (ID): 2 inches
Depth to Water: 113.20 ft, TOC
Depth to Bottom of Well: 134.78 ft, TOC
Feet of Water in Well: 21.58 ft
Volume of Water in Well: 3.52 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mho)	Temperature (°F) °C	Purge Rate (L/min)
1	113.20	8.01	821	11.06	1
5	113.22	6.62	837	10.89	1
10	113.24	6.86	837	10.90	1
15	113.24	6.86	838	10.91	1

Purge Start Time: 9:40 Purge End Time: 10:00 Total Volume Purged: 4.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N-Schlegel

Weather Conditions: 52°F 5–10 mph W sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemount
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/19/19
Well ID: D-20

Tubing Diameter (ID): 2 inches
Depth to Water: 111.74 ft, TOC
Depth to Bottom of Well: 163.98 ft, TOC
Feet of Water in Well: 52.24 ft
Volume of Water in Well: 8.52 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	111.74	5.91	769	10.55	1
10	111.76	5.93	769	10.55	1
20	111.78	5.96	769	10.56	1
30	111.79	5.98	769	10.55	1

Purge Start Time: 9:40 Purge End Time: 10:10 Total Volume Purged: 9.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlagel

Weather Conditions: 52°F, 5 - 10 mph W sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Basement
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/ /19
Well ID: D-45

Tubing Diameter (ID): 2 inches
Depth to Water: 100.44 ft, TOC
Depth to Bottom of Well: 128.40 ft, TOC
Feet of Water in Well: 27.96 ft
Volume of Water in Well: 4.56 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / µmhos)	Temperature (°F) °C	Purge Rate (L/min)
1	100.44	7.09	818	12.15	1
5	100.46	7.11	934	11.67	1
10	100.48	7.31	831	11.50	1
15	100.50	7.36	832	11.49	1

Purge Start Time: 10:20 Purge End Time: 10:40 Total Volume Purged: 5.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 56°F, 5-10 mi/h, W, sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemont
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 9/19/19
Well ID: D-40

Tubing Diameter (ID): 2 inches
Depth to Water: 100.58 ft, TOC
Depth to Bottom of Well: 139.7 ft, TOC
Feet of Water in Well: 39.12 ft
Volume of Water in Well: 6.38 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (u / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	100.58	7.68	908	11.38	1
10	100.60	7.68	908	11.38	1
20	100.62	7.67	906	11.38	1
30	100.64	7.68	907	11.37	1

Purge Start Time: 10:20 Purge End Time: 10:50 Total Volume Purged: 6.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlyer

Weather Conditions: 56°F, 5–10 mph W sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLB Rosemont		Tubing Diameter (ID):	2	inches
Project Number:	350		Depth to Water:	104.54	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	130.1	ft, TOC
Date:	9/19		Feet of Water in Well:	25.56	ft
Well ID:	D-8		Volume of Water in Well:	4.17	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ/mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	104.54	8.05	769	11.11	1
5	104.56	8.64	837	10.50	1
10	104.58	8.41	835	10.45	1
15	104.60	8.49	834	10.39	1

Purge Start Time: 10:55 Purge End Time: 11:10 Total Volume Purged: 45 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schlegel

Weather Conditions: 56°F, 5-10 mph. SW mostly sunny

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rapamycin
Project Number: 350
Sampling Device: Dedicated Bladder Pump
Date: 7/ /19
Well ID: D-9

Tubing Diameter (ID): 2 inches
Depth to Water: 94.20 ft, TOC
Depth to Bottom of Well: 130.1 ft, TOC
Feet of Water in Well: 35.90 ft
Volume of Water in Well: 5.85 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / µmho)	Temperature (°F) °C	Purge Rate (L/min)
1	94.20	8.09	725	13.11	1
5	94.22	5.83	747	11.80	1
10	94.24	5.75	689	11.77	1
15	94.26	5.75	689	11.78	1

Purge Start Time: 11:25 Purge End Time: 11:40 Total Volume Purged: 6.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlageil

Weather Conditions: 60°F, 5-10 mph SW mostly sunny

Comments:

Appendix B – Laboratory Analytical Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-151522-1
Client Project/Site: SKB Rosemount - CCR Groundwater
Sampling Event: CCR Groundwater

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

Attn: Nathaniel Beinemann

Authorized for release by:
5/7/2019 4:56:05 PM

Ryan VanDette, Project Manager II
(716)504-9830
ryan.vandette@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Qualifiers

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.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: Waste Connections, Inc. Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-151522-1

Comments
No additional comments.

Receipt
The samples were received on 4/5/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 1.6º C, 1.7º C, 2.0º C, 2.1º C, 2.3º C, 2.4º C and 2.5º C.

HPLC/IC
Method(s) 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: D-3S (480-151522-6). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples were reported with elevated reporting limits for all analytes: D-1S (480-151522-2) and D-3D (480-151522-5). The sample was analyzed at a dilution based on screening results.

Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: D-4S (480-151522-8), D-5S2 (480-151522-10) and U-4S (480-151522-15). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples were reported with elevated reporting limits for all analytes: D-5D (480-151522-9), D-7 (480-151522-11) and D-9 (480-151522-13). The sample was analyzed at a dilution based on screening results.

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

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

General Chemistry
Method(s) SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: D-1D (480-151522-1), D-1S (480-151522-2), D-2D (480-151522-3), D-2S (480-151522-4), D-3D (480-151522-5), D-3S (480-151522-6), D-4D (480-151522-7), D-4S (480-151522-8), D-5D (480-151522-9), D-5S2 (480-151522-10), D-7 (480-151522-11), D-8 (480-151522-12), D-9 (480-151522-13), U-4D (480-151522-14), U-4S (480-151522-15), U-5D (480-151522-16), U-5S (480-151522-17), FIELD BLANK (480-151522-18), EQUIPMENT BLANK (480-151522-19), DUPLICATE #1 (480-151522-20) and DUPLICATE #2 (480-151522-21).

Method(s) SM 2540C: The following samples were analyzed outside of analytical holding time due to sample login after expiration: U-4D (480-151522-14), U-4S (480-151522-15), U-5D (480-151522-16) and U-5S (480-151522-17).

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

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-1D — Lab Sample ID: 480-151522-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90.2		0.50		mg/L	1		6010D	Total/NA
Chloride	33.0		0.50		mg/L	1		300.0	Total/NA
Sulfate	29.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	379		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-1S — Lab Sample ID: 480-151522-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.033		0.020		mg/L	1		6010D	Total/NA
Calcium	110		0.50		mg/L	1		6010D	Total/NA
Chloride	33.5		1.0		mg/L	2		300.0	Total/NA
Sulfate	25.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	420		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2D — Lab Sample ID: 480-151522-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90.9		0.50		mg/L	1		6010D	Total/NA
Chloride	33.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.066		0.050		mg/L	1		300.0	Total/NA
Sulfate	23.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	362		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2S — Lab Sample ID: 480-151522-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.021		0.020		mg/L	1		6010D	Total/NA
Calcium	105		0.50		mg/L	1		6010D	Total/NA
Chloride	46.2		0.50		mg/L	1		300.0	Total/NA
Sulfate	25.6		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	408		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3D — Lab Sample ID: 480-151522-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.035		0.020		mg/L	1		6010D	Total/NA
Calcium	104		0.50		mg/L	1		6010D	Total/NA
Chloride	45.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	34.2		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	433		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-3S — Lab Sample ID: 480-151522-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.31		0.020		mg/L	1		6010D	Total/NA
Calcium	111		0.50		mg/L	1		6010D	Total/NA
Chloride	75.4		1.0		mg/L	2		300.0	Total/NA
Sulfate	47.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	591		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4D — Lab Sample ID: 480-151522-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	97.2		0.50		mg/L	1		6010D	Total/NA
Chloride	48.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.068		0.050		mg/L	1		300.0	Total/NA
Sulfate	25.6		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	392		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4S — Lab Sample ID: 480-151522-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	103		0.50		mg/L	1		6010D	Total/NA
Chloride	49.3		1.0		mg/L	2		300.0	Total/NA
Sulfate	26.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	405		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5D — Lab Sample ID: 480-151522-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	104		0.50		mg/L	1		6010D	Total/NA
Chloride	30.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	33.3		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	411		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5S2 — Lab Sample ID: 480-151522-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.088		0.020		mg/L	1		6010D	Total/NA
Calcium	116		0.50		mg/L	1		6010D	Total/NA
Chloride	64.2		1.0		mg/L	2		300.0	Total/NA
Sulfate	52.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	510		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	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 Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-7 — Lab Sample ID: 480-151522-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.040		0.020		mg/L	1		6010D	Total/NA
Calcium	107		0.50		mg/L	1		6010D	Total/NA
Chloride	27.3		1.0		mg/L	2		300.0	Total/NA
Sulfate	32.2		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	434		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-8 — Lab Sample ID: 480-151522-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99.1		0.50		mg/L	1		6010D	Total/NA
Chloride	36.4		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.093		0.050		mg/L	1		300.0	Total/NA
Sulfate	37.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	422		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-9 — Lab Sample ID: 480-151522-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.50		mg/L	1		6010D	Total/NA
Chloride	35.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	26.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	416		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4D — Lab Sample ID: 480-151522-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89.2		0.50		mg/L	1		6010D	Total/NA
Chloride	37.1		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.084		0.050		mg/L	1		300.0	Total/NA
Sulfate	26.4		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	389	H	10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4S — Lab Sample ID: 480-151522-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.022		0.020		mg/L	1		6010D	Total/NA
Calcium	112		0.50		mg/L	1		6010D	Total/NA
Chloride	46.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	10.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	449	H	10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	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 Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: U-5D — Lab Sample ID: 480-151522-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	86.8		0.50		mg/L	1		6010D	Total/NA
Chloride	27.9		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.075		0.050		mg/L	1		300.0	Total/NA
Sulfate	29.5		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	385	H	10.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5S — Lab Sample ID: 480-151522-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.022		0.020		mg/L	1		6010D	Total/NA
Calcium	91.9		0.50		mg/L	1		6010D	Total/NA
Chloride	43.2		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.079		0.050		mg/L	1		300.0	Total/NA
Sulfate	25.9		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	409	H	10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK — Lab Sample ID: 480-151522-18

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: EQUIPMENT BLANK — Lab Sample ID: 480-151522-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.13		0.050		mg/L	1		300.0	Total/NA
pH	5.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUPLICATE #1 — Lab Sample ID: 480-151522-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88.8		0.50		mg/L	1		6010D	Total/NA
Chloride	28.0		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.074		0.050		mg/L	1		300.0	Total/NA
Sulfate	29.6		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	367		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUPLICATE #2 — Lab Sample ID: 480-151522-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.024		0.020		mg/L	1		6010D	Total/NA
Calcium	102		0.50		mg/L	1		6010D	Total/NA
Chloride	35.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.065		0.050		mg/L	1		300.0	Total/NA
Sulfate	26.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	412		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: DUPLICATE #2 (Continued)
Lab Sample ID: 480-151522-21

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-1D

Date Collected: 04/02/19 16:00
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 15:43	1
Calcium	**90.2**		0.50		mg/L		04/10/19 07:20	04/12/19 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**33.0**		0.50		mg/L			04/10/19 15:42	1
Fluoride	ND		0.050		mg/L			04/10/19 15:42	1
Sulfate	**29.2**		2.0		mg/L			04/10/19 15:42	1
Total Dissolved Solids	**379**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			04/15/19 23:20	1
Temperature	**20.5**	**HF**	0.001		Degrees C			04/15/19 23:20	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-1S

Date Collected: 04/02/19 15:40
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.033		0.020		mg/L		04/10/19 07:20	04/12/19 16:01	1
Calcium	110		0.50		mg/L		04/10/19 07:20	04/12/19 16:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	33.5		1.0		mg/L			04/10/19 18:23	2
Fluoride	ND		0.10		mg/L			04/10/19 18:23	2
Sulfate	25.1		4.0		mg/L			04/10/19 18:23	2
Total Dissolved Solids	420		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			04/15/19 23:24	1
Temperature	20.5	HF	0.001		Degrees C			04/15/19 23:24	1

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-2D

Date Collected: 04/03/19 10:30
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:05	1
Calcium	**90.9**		0.50		mg/L		04/10/19 07:20	04/12/19 16:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**33.5**		0.50		mg/L			04/10/19 20:34	1
Fluoride	**0.066**		0.050		mg/L			04/10/19 20:34	1
Sulfate	**23.3**		2.0		mg/L			04/10/19 20:34	1
Total Dissolved Solids	**362**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:29	1
Temperature	**20.9**	**HF**	0.001		Degrees C			04/15/19 23:29	1

Client Sample ID: D-2S
Lab Sample ID: 480-151522-4

Date Collected: 04/03/19 09:40
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.021**		0.020		mg/L		04/10/19 07:20	04/12/19 16:08	1
Calcium	**105**		0.50		mg/L		04/10/19 07:20	04/12/19 16:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**46.2**		0.50		mg/L			04/10/19 20:49	1
Fluoride	ND		0.050		mg/L			04/10/19 20:49	1
Sulfate	**25.6**		2.0		mg/L			04/10/19 20:49	1
Total Dissolved Solids	**408**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:33	1
Temperature	**21.0**	**HF**	0.001		Degrees C			04/15/19 23:33	1

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-3D
Lab Sample ID: 480-151522-5
Date Collected: 04/02/19 14:40
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.035		0.020		mg/L		04/10/19 07:20	04/12/19 16:12	1
Calcium	104		0.50		mg/L		04/10/19 07:20	04/12/19 16:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	45.7		1.0		mg/L			04/10/19 21:03	2
Fluoride	ND		0.10		mg/L			04/10/19 21:03	2
Sulfate	34.2		4.0		mg/L			04/10/19 21:03	2
Total Dissolved Solids	433		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			04/15/19 23:36	1
Temperature	21.2	HF	0.001		Degrees C			04/15/19 23:36	1

Client Sample ID: D-3S
Date Collected: 04/02/19 14:15
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-6
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.31		0.020		mg/L		04/10/19 07:20	04/12/19 16:27	1
Calcium	111		0.50		mg/L		04/10/19 07:20	04/12/19 16:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75.4		1.0		mg/L			04/10/19 21:18	2
Fluoride	ND		0.10		mg/L			04/10/19 21:18	2
Sulfate	47.4		4.0		mg/L			04/10/19 21:18	2
Total Dissolved Solids	591		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			04/15/19 23:38	1
Temperature	20.9	HF	0.001		Degrees C			04/15/19 23:38	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-4D

Date Collected: 04/03/19 11:30
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-7

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:31	1
Calcium	**97.2**		0.50		mg/L		04/10/19 07:20	04/12/19 16:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**48.6**		0.50		mg/L			04/10/19 21:32	1
Fluoride	**0.068**		0.050		mg/L			04/10/19 21:32	1
Sulfate	**25.6**		2.0		mg/L			04/10/19 21:32	1
Total Dissolved Solids	**392**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:41	1
Temperature	**20.7**	**HF**	0.001		Degrees C			04/15/19 23:41	1

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-4S

Date Collected: 04/03/19 11:00
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-8

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:35	1
Calcium	**103**		0.50		mg/L		04/10/19 07:20	04/12/19 16:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**49.3**		1.0		mg/L			04/10/19 23:29	2
Fluoride	ND		0.10		mg/L			04/10/19 23:29	2
Sulfate	**26.1**		4.0		mg/L			04/10/19 23:29	2
Total Dissolved Solids	**405**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:44	1
Temperature	**20.7**	**HF**	0.001		Degrees C			04/15/19 23:44	1

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-5D
Lab Sample ID: 480-151522-9
Date Collected: 04/02/19 12:55
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:39	1
Calcium	**104**		0.50		mg/L		04/10/19 07:20	04/12/19 16:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**30.1**		1.0		mg/L			04/10/19 23:44	2
Fluoride	ND		0.10		mg/L			04/10/19 23:44	2
Sulfate	**33.3**		4.0		mg/L			04/10/19 23:44	2
Total Dissolved Solids	**411**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:47	1
Temperature	**20.7**	**HF**	0.001		Degrees C			04/15/19 23:47	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-5S2

Date Collected: 04/02/19 12:45
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-10

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.088		0.020		mg/L		04/10/19 07:20	04/12/19 16:42	1
Calcium	116		0.50		mg/L		04/10/19 07:20	04/12/19 16:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	64.2		1.0		mg/L			04/10/19 23:58	2
Fluoride	ND		0.10		mg/L			04/10/19 23:58	2
Sulfate	52.4		4.0		mg/L			04/10/19 23:58	2
Total Dissolved Solids	510		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			04/15/19 23:50	1
Temperature	20.7	HF	0.001		Degrees C			04/15/19 23:50	1

Client Sample ID: D-7
Lab Sample ID: 480-151522-11

Date Collected: 04/03/19 12:10
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.040**		0.020		mg/L		04/10/19 07:20	04/12/19 16:46	1
Calcium	**107**		0.50		mg/L		04/10/19 07:20	04/12/19 16:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.3**		1.0		mg/L			04/11/19 00:13	2
Fluoride	ND		0.10		mg/L			04/11/19 00:13	2
Sulfate	**32.2**		4.0		mg/L			04/11/19 00:13	2
Total Dissolved Solids	**434**		10.0		mg/L			04/09/19 14:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/15/19 23:53	1
Temperature	**20.9**	**HF**	0.001		Degrees C			04/15/19 23:53	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-8

Date Collected: 04/03/19 13:25
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-12

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:50	1
Calcium	**99.1**		0.50		mg/L		04/10/19 07:20	04/12/19 16:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**36.4**		0.50		mg/L			04/11/19 00:27	1
Fluoride	**0.093**		0.050		mg/L			04/11/19 00:27	1
Sulfate	**37.3**		2.0		mg/L			04/11/19 00:27	1
Total Dissolved Solids	**422**		10.0		mg/L			04/09/19 14:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			04/15/19 23:55	1
Temperature	**21.2**	**HF**	0.001		Degrees C			04/15/19 23:55	1

Client Sample ID: D-9
Lab Sample ID: 480-151522-13

Date Collected: 04/03/19 14:45
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:54	1
Calcium	**100**		0.50		mg/L		04/10/19 07:20	04/12/19 16:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**35.8**		1.0		mg/L			04/11/19 00:42	2
Fluoride	ND		0.10		mg/L			04/11/19 00:42	2
Sulfate	**26.4**		4.0		mg/L			04/11/19 00:42	2
Total Dissolved Solids	**416**		10.0		mg/L			04/09/19 14:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/16/19 00:01	1
Temperature	**21.0**	**HF**	0.001		Degrees C			04/16/19 00:01	1

Client Sample ID: U-4D
Lab Sample ID: 480-151522-14

Date Collected: 04/01/19 14:40
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 16:57	1
Calcium	**89.2**		0.50		mg/L		04/10/19 07:20	04/12/19 16:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37.1**		0.50		mg/L			04/11/19 01:55	1
Fluoride	**0.084**		0.050		mg/L			04/11/19 01:55	1
Sulfate	**26.4**		2.0		mg/L			04/11/19 01:55	1
Total Dissolved Solids	**389**	**H**	10.0		mg/L			04/15/19 01:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/16/19 00:07	1
Temperature	**20.7**	**HF**	0.001		Degrees C			04/16/19 00:07	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: U-4S

Date Collected: 04/01/19 13:45
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-15

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.022		0.020		mg/L		04/10/19 07:20	04/12/19 17:12	1
Calcium	112		0.50		mg/L		04/10/19 07:20	04/12/19 17:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	46.7		1.0		mg/L			04/11/19 02:10	2
Fluoride	ND		0.10		mg/L			04/11/19 02:10	2
Sulfate	10.4		4.0		mg/L			04/11/19 02:10	2
Total Dissolved Solids	449	H	10.0		mg/L			04/15/19 01:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			04/16/19 00:10	1
Temperature	20.7	HF	0.001		Degrees C			04/16/19 00:10	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: U-5D

Date Collected: 04/01/19 10:40
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-16

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 17:16	1
Calcium	**86.8**		0.50		mg/L		04/10/19 07:20	04/12/19 17:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.9**		0.50		mg/L			04/11/19 02:24	1
Fluoride	**0.075**		0.050		mg/L			04/11/19 02:24	1
Sulfate	**29.5**		2.0		mg/L			04/11/19 02:24	1
Total Dissolved Solids	**385**	**H**	10.0		mg/L			04/15/19 01:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			04/16/19 00:13	1
Temperature	**20.6**	**HF**	0.001		Degrees C			04/16/19 00:13	1

Client Sample ID: U-5S
Lab Sample ID: 480-151522-17

Date Collected: 04/01/19 09:40
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.022		0.020		mg/L		04/10/19 07:20	04/12/19 17:20	1
Calcium	91.9		0.50		mg/L		04/10/19 07:20	04/12/19 17:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	43.2		0.50		mg/L			04/11/19 02:39	1
Fluoride	0.079		0.050		mg/L			04/11/19 02:39	1
Sulfate	25.9		2.0		mg/L			04/11/19 02:39	1
Total Dissolved Solids	409	H	10.0		mg/L			04/15/19 01:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			04/16/19 00:16	1
Temperature	21.0	HF	0.001		Degrees C			04/16/19 00:16	1

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: FIELD BLANK
Lab Sample ID: 480-151522-18
Date Collected: 04/02/19 11:45
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 17:24	1
Calcium	ND		0.50		mg/L		04/10/19 07:20	04/12/19 17:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/11/19 02:53	1
Fluoride	ND		0.050		mg/L			04/11/19 02:53	1
Sulfate	ND		2.0		mg/L			04/11/19 02:53	1
Total Dissolved Solids	ND		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.3**	**HF**	0.1		SU			04/16/19 00:19	1
Temperature	**21.1**	**HF**	0.001		Degrees C			04/16/19 00:19	1

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: EQUIPMENT BLANK
Lab Sample ID: 480-151522-19

Date Collected: 04/03/19 15:20
Matrix: Water
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 17:27	1
Calcium	ND		0.50		mg/L		04/10/19 07:20	04/12/19 17:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/11/19 03:08	1
Fluoride	**0.13**		0.050		mg/L			04/11/19 03:08	1
Sulfate	ND		2.0		mg/L			04/11/19 03:08	1
Total Dissolved Solids	ND		10.0		mg/L			04/09/19 14:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**5.9**	**HF**	0.1		SU			04/16/19 00:22	1
Temperature	**21.0**	**HF**	0.001		Degrees C			04/16/19 00:22	1

Client Sample ID: DUPLICATE #1 Lab Sample ID: 480-151522-20

Date Collected: 04/02/19 00:00 **Matrix: Water**
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 17:31	1
Calcium	**88.8**		0.50		mg/L		04/10/19 07:20	04/12/19 17:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28.0**		0.50		mg/L			04/11/19 03:22	1
Fluoride	**0.074**		0.050		mg/L			04/11/19 03:22	1
Sulfate	**29.6**		2.0		mg/L			04/11/19 03:22	1
Total Dissolved Solids	**367**		10.0		mg/L			04/09/19 13:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			04/16/19 00:24	1
Temperature	**20.9**	**HF**	0.001		Degrees C			04/16/19 00:24	1

Client Sample ID: DUPLICATE #2 Lab Sample ID: 480-151522-21

Date Collected: 04/03/19 00:00 **Matrix: Water**
Date Received: 04/05/19 09:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.024		0.020		mg/L		04/10/19 07:18	04/10/19 17:19	1
Calcium	102		0.50		mg/L		04/10/19 07:18	04/10/19 17:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	35.6		0.50		mg/L			04/11/19 03:52	1
Fluoride	0.065		0.050		mg/L			04/11/19 03:52	1
Sulfate	26.2		2.0		mg/L			04/11/19 03:52	1
Total Dissolved Solids	412		10.0		mg/L			04/09/19 14:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			04/16/19 00:27	1
Temperature	20.8	HF	0.001		Degrees C			04/16/19 00:27	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-467042/1-A
Matrix: Water
Analysis Batch: 467799

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 467042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:20	04/12/19 15:24	1
Calcium	ND		0.50		mg/L		04/10/19 07:20	04/12/19 15:24	1

Lab Sample ID: LCS 480-467042/2-A
Matrix: Water
Analysis Batch: 467799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 467042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.195		mg/L		97	80 - 120
Calcium	10.0	10.11		mg/L		101	80 - 120

Lab Sample ID: 480-151522-1 MS
Matrix: Water
Analysis Batch: 467799

Client Sample ID: D-1D
Prep Type: Total/NA
Prep Batch: 467042

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	ND		0.200	0.214		mg/L		99	75 - 125
Calcium	90.2		10.0	98.03	4	mg/L		79	75 - 125

Lab Sample ID: 480-151522-1 MSD
Matrix: Water
Analysis Batch: 467799

Client Sample ID: D-1D
Prep Type: Total/NA
Prep Batch: 467042

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	ND		0.200	0.219		mg/L		101	75 - 125	2	20
Calcium	90.2		10.0	98.12	4	mg/L		79	75 - 125	0	20

Lab Sample ID: MB 480-467047/1-A
Matrix: Water
Analysis Batch: 467373

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 467047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		04/10/19 07:18	04/10/19 17:12	1
Calcium	ND		0.50		mg/L		04/10/19 07:18	04/10/19 17:12	1

Lab Sample ID: LCS 480-467047/2-A
Matrix: Water
Analysis Batch: 467373

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 467047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.201		mg/L		101	80 - 120
Calcium	10.0	10.00		mg/L		100	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-467144/28
Matrix: Water
Analysis Batch: 467144

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/10/19 16:55	1
Fluoride	ND		0.050		mg/L			04/10/19 16:55	1
Sulfate	ND		2.0		mg/L			04/10/19 16:55	1

Lab Sample ID: MB 480-467144/4
Matrix: Water
Analysis Batch: 467144

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/10/19 11:04	1
Fluoride	ND		0.050		mg/L			04/10/19 11:04	1
Sulfate	ND		2.0		mg/L			04/10/19 11:04	1

Lab Sample ID: LCS 480-467144/27
Matrix: Water
Analysis Batch: 467144

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.61		mg/L		101	90 - 110
Fluoride	5.00	5.11		mg/L		102	90 - 110
Sulfate	50.0	50.90		mg/L		102	90 - 110

Lab Sample ID: LCS 480-467144/3
Matrix: Water
Analysis Batch: 467144

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.21		mg/L		98	90 - 110
Fluoride	5.00	4.87		mg/L		97	90 - 110
Sulfate	50.0	50.94		mg/L		102	90 - 110

Lab Sample ID: 480-151522-1 MS
Matrix: Water
Analysis Batch: 467144

Client Sample ID: D-1D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	33.0		50.0	82.75		mg/L		100	81 - 120
Fluoride	ND		5.00	4.99		mg/L		99	82 - 120
Sulfate	29.2		50.0	77.84		mg/L		97	80 - 120

Lab Sample ID: 480-151522-2 MS
Matrix: Water
Analysis Batch: 467144

Client Sample ID: D-1S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	33.5		100	138.2		mg/L		105	81 - 120
Fluoride	ND		10.0	10.20		mg/L		102	82 - 120
Sulfate	25.1		100	126.0		mg/L		101	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-151522-2 MSD
Matrix: Water
Analysis Batch: 467144

Client Sample ID: D-1S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	33.5		100	137.6		mg/L		104	81 - 120	0	20
Fluoride	ND		10.0	10.41		mg/L		104	82 - 120	2	20
Sulfate	25.1		100	128.9		mg/L		104	80 - 120	2	20

Lab Sample ID: 480-151522-7 MS
Matrix: Water
Analysis Batch: 467144

Client Sample ID: D-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	48.6		50.0	97.22		mg/L		97	81 - 120
Fluoride	0.068		5.00	5.13		mg/L		101	82 - 120
Sulfate	25.6		50.0	74.68		mg/L		98	80 - 120

Lab Sample ID: MB 480-467219/4
Matrix: Water
Analysis Batch: 467219

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/10/19 23:15	1
Fluoride	ND		0.050		mg/L			04/10/19 23:15	1
Sulfate	ND		2.0		mg/L			04/10/19 23:15	1

Lab Sample ID: LCS 480-467219/3
Matrix: Water
Analysis Batch: 467219

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.16		mg/L		104	90 - 110
Fluoride	5.00	5.13		mg/L		103	90 - 110
Sulfate	50.0	51.62		mg/L		103	90 - 110

Lab Sample ID: 480-151522-13 MS
Matrix: Water
Analysis Batch: 467219

Client Sample ID: D-9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	35.8		100	139.8		mg/L		104	81 - 120
Fluoride	ND		10.0	10.50		mg/L		105	82 - 120
Sulfate	26.4		100	130.8		mg/L		104	80 - 120

Lab Sample ID: 480-151522-13 MSD
Matrix: Water
Analysis Batch: 467219

Client Sample ID: D-9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	35.8		100	140.4		mg/L		105	81 - 120	0	20
Fluoride	ND		10.0	10.30		mg/L		103	82 - 120	2	20
Sulfate	26.4		100	126.2		mg/L		100	80 - 120	4	20

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-151522-21 MS
Matrix: Water
Analysis Batch: 467219

Client Sample ID: DUPLICATE #2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	35.6		50.0	85.59		mg/L		100	81 - 120
Fluoride	0.065		5.00	5.04		mg/L		100	82 - 120
Sulfate	26.2		50.0	76.53		mg/L		101	80 - 120

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

Lab Sample ID: MB 480-466966/1
Matrix: Water
Analysis Batch: 466966

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	ND		10.0		mg/L			04/09/19 13:14	1

Lab Sample ID: LCS 480-466966/2
Matrix: Water
Analysis Batch: 466966

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	500	488.0		mg/L		98	85 - 115

Lab Sample ID: 480-151522-1 DU
Matrix: Water
Analysis Batch: 466966

Client Sample ID: D-1D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	379		377.0		mg/L		0.5	10

Lab Sample ID: 480-151522-8 DU
Matrix: Water
Analysis Batch: 466966

Client Sample ID: D-4S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	405		405.0		mg/L		0	10

Lab Sample ID: MB 480-466984/1
Matrix: Water
Analysis Batch: 466984

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	ND		10.0		mg/L			04/09/19 14:06	1

Lab Sample ID: LCS 480-466984/2
Matrix: Water
Analysis Batch: 466984

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	500	482.0		mg/L		96	85 - 115

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

Lab Sample ID: 480-151522-11 DU
Matrix: Water
Analysis Batch: 466984

Client Sample ID: D-7
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	434			430.0		mg/L				0.9	10

Lab Sample ID: MB 480-467862/1
Matrix: Water
Analysis Batch: 467862

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	ND		10.0		mg/L			04/15/19 01:37	1

Lab Sample ID: LCS 480-467862/2
Matrix: Water
Analysis Batch: 467862

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			500	481.0		mg/L		96	85 - 115		

Lab Sample ID: 480-151522-14 DU
Matrix: Water
Analysis Batch: 467862

Client Sample ID: U-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	389	H		393.0		mg/L				1	10

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-468088/1
Matrix: Water
Analysis Batch: 468088

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	99 - 101		

Lab Sample ID: LCS 480-468088/23
Matrix: Water
Analysis Batch: 468088

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	99 - 101		

Lab Sample ID: 480-151522-13 DU
Matrix: Water
Analysis Batch: 468088

Client Sample ID: D-9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.7	HF		7.7		SU				0.3	5
Temperature	21.0	HF		20.8		Degrees C				0.6	10

Metals

Prep Batch: 467042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-1	D-1D	Total/NA	Water	3005A	
480-151522-2	D-1S	Total/NA	Water	3005A	
480-151522-3	D-2D	Total/NA	Water	3005A	
480-151522-4	D-2S	Total/NA	Water	3005A	
480-151522-5	D-3D	Total/NA	Water	3005A	
480-151522-6	D-3S	Total/NA	Water	3005A	
480-151522-7	D-4D	Total/NA	Water	3005A	
480-151522-8	D-4S	Total/NA	Water	3005A	
480-151522-9	D-5D	Total/NA	Water	3005A	
480-151522-10	D-5S2	Total/NA	Water	3005A	
480-151522-11	D-7	Total/NA	Water	3005A	
480-151522-12	D-8	Total/NA	Water	3005A	
480-151522-13	D-9	Total/NA	Water	3005A	
480-151522-14	U-4D	Total/NA	Water	3005A	
480-151522-15	U-4S	Total/NA	Water	3005A	
480-151522-16	U-5D	Total/NA	Water	3005A	
480-151522-17	U-5S	Total/NA	Water	3005A	
480-151522-18	FIELD BLANK	Total/NA	Water	3005A	
480-151522-19	EQUIPMENT BLANK	Total/NA	Water	3005A	
480-151522-20	DUPLICATE #1	Total/NA	Water	3005A	
MB 480-467042/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-467042/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-151522-1 MS	D-1D	Total/NA	Water	3005A	
480-151522-1 MSD	D-1D	Total/NA	Water	3005A	

Prep Batch: 467047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-21	DUPLICATE #2	Total/NA	Water	3005A	
MB 480-467047/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-467047/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 467373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-21	DUPLICATE #2	Total/NA	Water	6010D	467047
MB 480-467047/1-A	Method Blank	Total/NA	Water	6010D	467047
LCS 480-467047/2-A	Lab Control Sample	Total/NA	Water	6010D	467047

Analysis Batch: 467799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-1	D-1D	Total/NA	Water	6010D	467042
480-151522-2	D-1S	Total/NA	Water	6010D	467042
480-151522-3	D-2D	Total/NA	Water	6010D	467042
480-151522-4	D-2S	Total/NA	Water	6010D	467042
480-151522-5	D-3D	Total/NA	Water	6010D	467042
480-151522-6	D-3S	Total/NA	Water	6010D	467042
480-151522-7	D-4D	Total/NA	Water	6010D	467042
480-151522-8	D-4S	Total/NA	Water	6010D	467042
480-151522-9	D-5D	Total/NA	Water	6010D	467042
480-151522-10	D-5S2	Total/NA	Water	6010D	467042
480-151522-11	D-7	Total/NA	Water	6010D	467042
480-151522-12	D-8	Total/NA	Water	6010D	467042

Metals (Continued)

Analysis Batch: 467799 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-13	D-9	Total/NA	Water	6010D	467042
480-151522-14	U-4D	Total/NA	Water	6010D	467042
480-151522-15	U-4S	Total/NA	Water	6010D	467042
480-151522-16	U-5D	Total/NA	Water	6010D	467042
480-151522-17	U-5S	Total/NA	Water	6010D	467042
480-151522-18	FIELD BLANK	Total/NA	Water	6010D	467042
480-151522-19	EQUIPMENT BLANK	Total/NA	Water	6010D	467042
480-151522-20	DUPLICATE #1	Total/NA	Water	6010D	467042
MB 480-467042/1-A	Method Blank	Total/NA	Water	6010D	467042
LCS 480-467042/2-A	Lab Control Sample	Total/NA	Water	6010D	467042
480-151522-1 MS	D-1D	Total/NA	Water	6010D	467042
480-151522-1 MSD	D-1D	Total/NA	Water	6010D	467042

General Chemistry

Analysis Batch: 466966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-1	D-1D	Total/NA	Water	SM 2540C	
480-151522-2	D-1S	Total/NA	Water	SM 2540C	
480-151522-3	D-2D	Total/NA	Water	SM 2540C	
480-151522-4	D-2S	Total/NA	Water	SM 2540C	
480-151522-5	D-3D	Total/NA	Water	SM 2540C	
480-151522-6	D-3S	Total/NA	Water	SM 2540C	
480-151522-7	D-4D	Total/NA	Water	SM 2540C	
480-151522-8	D-4S	Total/NA	Water	SM 2540C	
480-151522-9	D-5D	Total/NA	Water	SM 2540C	
480-151522-10	D-5S2	Total/NA	Water	SM 2540C	
480-151522-18	FIELD BLANK	Total/NA	Water	SM 2540C	
480-151522-20	DUPLICATE #1	Total/NA	Water	SM 2540C	
MB 480-466966/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-466966/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-151522-1 DU	D-1D	Total/NA	Water	SM 2540C	
480-151522-8 DU	D-4S	Total/NA	Water	SM 2540C	

Analysis Batch: 466984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-11	D-7	Total/NA	Water	SM 2540C	
480-151522-12	D-8	Total/NA	Water	SM 2540C	
480-151522-13	D-9	Total/NA	Water	SM 2540C	
480-151522-19	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
480-151522-21	DUPLICATE #2	Total/NA	Water	SM 2540C	
MB 480-466984/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-466984/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-151522-11 DU	D-7	Total/NA	Water	SM 2540C	

Analysis Batch: 467144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-1	D-1D	Total/NA	Water	300.0	
480-151522-2	D-1S	Total/NA	Water	300.0	
480-151522-3	D-2D	Total/NA	Water	300.0	
480-151522-4	D-2S	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 467144 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-5	D-3D	Total/NA	Water	300.0	
480-151522-6	D-3S	Total/NA	Water	300.0	
480-151522-7	D-4D	Total/NA	Water	300.0	
MB 480-467144/28	Method Blank	Total/NA	Water	300.0	
MB 480-467144/4	Method Blank	Total/NA	Water	300.0	
LCS 480-467144/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-467144/3	Lab Control Sample	Total/NA	Water	300.0	
480-151522-1 MS	D-1D	Total/NA	Water	300.0	
480-151522-2 MS	D-1S	Total/NA	Water	300.0	
480-151522-2 MSD	D-1S	Total/NA	Water	300.0	
480-151522-7 MS	D-4D	Total/NA	Water	300.0	

Analysis Batch: 467219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-8	D-4S	Total/NA	Water	300.0	
480-151522-9	D-5D	Total/NA	Water	300.0	
480-151522-10	D-5S2	Total/NA	Water	300.0	
480-151522-11	D-7	Total/NA	Water	300.0	
480-151522-12	D-8	Total/NA	Water	300.0	
480-151522-13	D-9	Total/NA	Water	300.0	
480-151522-14	U-4D	Total/NA	Water	300.0	
480-151522-15	U-4S	Total/NA	Water	300.0	
480-151522-16	U-5D	Total/NA	Water	300.0	
480-151522-17	U-5S	Total/NA	Water	300.0	
480-151522-18	FIELD BLANK	Total/NA	Water	300.0	
480-151522-19	EQUIPMENT BLANK	Total/NA	Water	300.0	
480-151522-20	DUPLICATE #1	Total/NA	Water	300.0	
480-151522-21	DUPLICATE #2	Total/NA	Water	300.0	
MB 480-467219/4	Method Blank	Total/NA	Water	300.0	
LCS 480-467219/3	Lab Control Sample	Total/NA	Water	300.0	
480-151522-13 MS	D-9	Total/NA	Water	300.0	
480-151522-13 MSD	D-9	Total/NA	Water	300.0	
480-151522-21 MS	DUPLICATE #2	Total/NA	Water	300.0	

Analysis Batch: 467862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-14	U-4D	Total/NA	Water	SM 2540C	
480-151522-15	U-4S	Total/NA	Water	SM 2540C	
480-151522-16	U-5D	Total/NA	Water	SM 2540C	
480-151522-17	U-5S	Total/NA	Water	SM 2540C	
MB 480-467862/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-467862/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-151522-14 DU	U-4D	Total/NA	Water	SM 2540C	

Analysis Batch: 468088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-1	D-1D	Total/NA	Water	SM 4500 H+ B	
480-151522-2	D-1S	Total/NA	Water	SM 4500 H+ B	
480-151522-3	D-2D	Total/NA	Water	SM 4500 H+ B	
480-151522-4	D-2S	Total/NA	Water	SM 4500 H+ B	
480-151522-5	D-3D	Total/NA	Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 468088 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151522-6	D-3S	Total/NA	Water	SM 4500 H+ B	
480-151522-7	D-4D	Total/NA	Water	SM 4500 H+ B	
480-151522-8	D-4S	Total/NA	Water	SM 4500 H+ B	
480-151522-9	D-5D	Total/NA	Water	SM 4500 H+ B	
480-151522-10	D-5S2	Total/NA	Water	SM 4500 H+ B	
480-151522-11	D-7	Total/NA	Water	SM 4500 H+ B	
480-151522-12	D-8	Total/NA	Water	SM 4500 H+ B	
480-151522-13	D-9	Total/NA	Water	SM 4500 H+ B	
480-151522-14	U-4D	Total/NA	Water	SM 4500 H+ B	
480-151522-15	U-4S	Total/NA	Water	SM 4500 H+ B	
480-151522-16	U-5D	Total/NA	Water	SM 4500 H+ B	
480-151522-17	U-5S	Total/NA	Water	SM 4500 H+ B	
480-151522-18	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-151522-19	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
480-151522-20	DUPLICATE #1	Total/NA	Water	SM 4500 H+ B	
480-151522-21	DUPLICATE #2	Total/NA	Water	SM 4500 H+ B	
LCS 480-468088/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-468088/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-151522-13 DU	D-9	Total/NA	Water	SM 4500 H+ B	

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-1D
Lab Sample ID: 480-151522-1
Date Collected: 04/02/19 16:00
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 15:43	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467144	04/10/19 15:42	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:20	KEB	TAL BUF

Client Sample ID: D-1S
Lab Sample ID: 480-151522-2
Date Collected: 04/02/19 15:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:01	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467144	04/10/19 18:23	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:24	KEB	TAL BUF

Client Sample ID: D-2D
Lab Sample ID: 480-151522-3
Date Collected: 04/03/19 10:30
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:05	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467144	04/10/19 20:34	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:29	KEB	TAL BUF

Client Sample ID: D-2S
Lab Sample ID: 480-151522-4
Date Collected: 04/03/19 09:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:08	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467144	04/10/19 20:49	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:33	KEB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-3D
Lab Sample ID: 480-151522-5
Date Collected: 04/02/19 14:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:12	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467144	04/10/19 21:03	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:36	KEB	TAL BUF

Client Sample ID: D-3S
Lab Sample ID: 480-151522-6
Date Collected: 04/02/19 14:15
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:27	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467144	04/10/19 21:18	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:38	KEB	TAL BUF

Client Sample ID: D-4D
Lab Sample ID: 480-151522-7
Date Collected: 04/03/19 11:30
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:31	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467144	04/10/19 21:32	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:41	KEB	TAL BUF

Client Sample ID: D-4S
Lab Sample ID: 480-151522-8
Date Collected: 04/03/19 11:00
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:35	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/10/19 23:29	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:44	KEB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Client Sample ID: D-5D
Date Collected: 04/02/19 12:55
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:39	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/10/19 23:44	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:47	KEB	TAL BUF

Client Sample ID: D-5S2
Date Collected: 04/02/19 12:45
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:42	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/10/19 23:58	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:50	KEB	TAL BUF

Client Sample ID: D-7
Date Collected: 04/03/19 12:10
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:46	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/11/19 00:13	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466984	04/09/19 14:06	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:53	KEB	TAL BUF

Client Sample ID: D-8
Date Collected: 04/03/19 13:25
Date Received: 04/05/19 09:15

Lab Sample ID: 480-151522-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:50	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 00:27	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466984	04/09/19 14:06	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/15/19 23:55	KEB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-9
Lab Sample ID: 480-151522-13
Date Collected: 04/03/19 14:45
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:54	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/11/19 00:42	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466984	04/09/19 14:06	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:01	KEB	TAL BUF

Client Sample ID: U-4D
Lab Sample ID: 480-151522-14
Date Collected: 04/01/19 14:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 16:57	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 01:55	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	467862	04/15/19 01:37	MLS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:07	KEB	TAL BUF

Client Sample ID: U-4S
Lab Sample ID: 480-151522-15
Date Collected: 04/01/19 13:45
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:12	LMH	TAL BUF
Total/NA	Analysis	300.0		2	467219	04/11/19 02:10	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	467862	04/15/19 01:37	MLS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:10	KEB	TAL BUF

Client Sample ID: U-5D
Lab Sample ID: 480-151522-16
Date Collected: 04/01/19 10:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:16	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 02:24	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	467862	04/15/19 01:37	MLS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:13	KEB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: U-5S
Lab Sample ID: 480-151522-17
Date Collected: 04/01/19 09:40
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:20	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 02:39	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	467862	04/15/19 01:37	MLS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:16	KEB	TAL BUF

Client Sample ID: FIELD BLANK
Lab Sample ID: 480-151522-18
Date Collected: 04/02/19 11:45
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:24	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 02:53	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:19	KEB	TAL BUF

Client Sample ID: EQUIPMENT BLANK
Lab Sample ID: 480-151522-19
Date Collected: 04/03/19 15:20
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:27	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 03:08	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466984	04/09/19 14:06	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:22	KEB	TAL BUF

Client Sample ID: DUPLICATE #1
Lab Sample ID: 480-151522-20
Date Collected: 04/02/19 00:00
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467042	04/10/19 07:20	MV	TAL BUF
Total/NA	Analysis	6010D		1	467799	04/12/19 17:31	LMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 03:22	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466966	04/09/19 13:14	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:24	KEB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: DUPLICATE #2
Lab Sample ID: 480-151522-21
Date Collected: 04/03/19 00:00
Matrix: Water
Date Received: 04/05/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			467047	04/10/19 07:18	MV	TAL BUF
Total/NA	Analysis	6010D		1	467373	04/10/19 17:19	AMH	TAL BUF
Total/NA	Analysis	300.0		1	467219	04/11/19 03:52	EMD	TAL BUF
Total/NA	Analysis	SM 2540C		1	466984	04/09/19 14:06	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	468088	04/16/19 00:27	KEB	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 480-151522-1
Project/Site: SKB Rosemount - CCR Groundwater

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-151522-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-151522-1	D-1D	Water	04/02/19 16:00	04/05/19 09:15
480-151522-2	D-1S	Water	04/02/19 15:40	04/05/19 09:15
480-151522-3	D-2D	Water	04/03/19 10:30	04/05/19 09:15
480-151522-4	D-2S	Water	04/03/19 09:40	04/05/19 09:15
480-151522-5	D-3D	Water	04/02/19 14:40	04/05/19 09:15
480-151522-6	D-3S	Water	04/02/19 14:15	04/05/19 09:15
480-151522-7	D-4D	Water	04/03/19 11:30	04/05/19 09:15
480-151522-8	D-4S	Water	04/03/19 11:00	04/05/19 09:15
480-151522-9	D-5D	Water	04/02/19 12:55	04/05/19 09:15
480-151522-10	D-5S2	Water	04/02/19 12:45	04/05/19 09:15
480-151522-11	D-7	Water	04/03/19 12:10	04/05/19 09:15
480-151522-12	D-8	Water	04/03/19 13:25	04/05/19 09:15
480-151522-13	D-9	Water	04/03/19 14:45	04/05/19 09:15
480-151522-14	U-4D	Water	04/01/19 14:40	04/05/19 09:15
480-151522-15	U-4S	Water	04/01/19 13:45	04/05/19 09:15
480-151522-16	U-5D	Water	04/01/19 10:40	04/05/19 09:15
480-151522-17	U-5S	Water	04/01/19 09:40	04/05/19 09:15
480-151522-18	FIELD BLANK	Water	04/02/19 11:45	04/05/19 09:15
480-151522-19	EQUIPMENT BLANK	Water	04/03/19 15:20	04/05/19 09:15
480-151522-20	DUPLICATE #1	Water	04/02/19 00:00	04/05/19 09:15
480-151522-21	DUPLICATE #2	Water	04/03/19 00:00	04/05/19 09:15

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-126522-22506.2
Client Contact: Nathaniel Beinemann	Phone: 651-792-6065	E-Mail: ryan.vandette@testamericainc.com		Page: Page 2 of 2
Company: Waste Connections, Inc.				Job #:

Address: 13425 Courthouse Blvd	Due Date Requested:
City: Rosemount	TAT Requested (days): Standard TAT
State, Zip: MN, 55068	
Phone:	PO #: Purchase Order Requested 3078-19-0088
Email: nathanielb@wcnx.org	WO #:
Project Name: SKB Rosemount/ Event Desc: CCR Groundwater	Project #: 48013709
Site: Minnesota	SSOW#:

Analysis Requested

480-151522 Chain of Custody

I - Ice
J - DI Water
K - EDTA
L - EDA
U - Acetone
V - MCAA
W - pH 4-5
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)	300.0_28D - Cl/F/SO4	6010D - B/Ca	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N		
U-5S	4/2/19	9:40	6	Water			X	X	X	X		
D-1D	4/2/19	16:00	6	Water			X	X	X	X		
D-2D	4/3/19	10:30	6	Water			X	X	X	X		
D-3D	4/2/19	14:40	6	Water			X	X	X	X		
D-4D	4/3/19	11:30	6	Water			X	X	X	X		
D-5D	4/2/19	12:55	6	Water			X	X	X	X		
Field Blank	4/2/19	11:45	6	Water			X	X	X	X		
Equipment Blank	4/3/19	15:20	6	Water			X	X	X	X		
Duplicate #1	4/2/19	—	6	Water			X	X	X	X		
Duplicate #2	4/3/19	—	6	Water			X	X	X	X		

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
N. Schlegel	4/4/19 14:23	GES	Thomas S. Rais	4-4-19 14:23	T/A
Thomas S. Rais	4-4-19 17:00				
				4-5-19 915	TAB

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

Ver: 01/16/2019

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-126522-22506.1
Client Contact: Nathaniel Beinemann	Phone: 651-792-6065	E-Mail: ryan.vandette@testamericainc.com		Page: Page 1 of 2
Company: Waste Connections, Inc.				Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): Standard TAT			
State, Zip: MN, 55068				
Phone:	PO #: Purchase Order Requested 3078-19-00089			
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Rosemount/ Event Desc: CCR Groundwater	Project #: 48013709			
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)	300.0_28D - Cl/F/SO4	6010D - B/Ca	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N		
D-1S	4/2/19	15:40	6	Water			X	X	X	X		
D-2S	4/3/19	9:40	6	Water			X	X	X	X		
D-3S	4/2/19	14:15	6	Water			X	X	X	X		
D-4S	4/3/19	11:00	6	Water			X	X	X	X		
D-5S2	4/2/19	12:45	6	Water			X	X	X	X		
D-7	4/3/19	12:16	6	Water			X	X	X	X		
D-8	4/3/19	13:25	6	Water			X	X	X	X		
D-9	4/3/19	14:45	6	Water			X	X	X	X		
U-4D	4/1/19	14:40	6	Water			X	X	X	X		
U-4S	4/1/19	15:45	6	Water			X	X	X	X		
U-5D	4/2/19	10:40	6	Water			X	X	X	X		

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	Nicholas Schlegel	4/4/19 14:23	6ES	Thomas G Reis	4-4-19 14:23	T/A
2	Thomas G Reis	4-4-19 17:00			915	
3					4-5-19	TAB

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: #1 2.0, 2.1, 1.7, 2.4, 2.5, 1.6, 2.3

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-151522-1
SDG Number:

Login Number: 151522
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
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.	N/A	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-160015-1
Client Project/Site: SKB Rosemount - CCR Groundwater
Sampling Event: CCR Groundwater
Revision: 2

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

Attn: Nathaniel Beinemann

Authorized for release by:
11/7/2019 1:59:52 PM
Wyatt Watson, Project Management Assistant I
wyatt.watson@testamericainc.com

Designee for

Ryan VanDette, Project Manager II
(716)504-9830
ryan.vandette@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Waste Connections, Inc. Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Qualifiers

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.

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 480-160015-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-160015-1

Comments
No additional comments.

Receipt
The samples were received on 9/28/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.4º C, 2.6º C, 2.7º C, 3.0º C and 3.3º C.

Receipt Exceptions
The following samples were received with insufficient preservation: 3.0mL of HNO3 was added by the laboratory, and the samples pH was adjusted to <2. DUP-2 (480-160015-19) and FIELD BLANK (480-160015-21)

This report has been revised to include Rad data.

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

HPLC/IC
Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: D-3S (480-160015-6), D-5S2 (480-160015-10) and DUP-2 (480-160015-19). Elevated reporting limits (RLs) are provided.

Method 300.0: The following samples were reported with elevated reporting limits for all analytes: D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-7 (480-160015-11), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17) and DUP-1 (480-160015-18). The sample was analyzed at a dilution based on screening results.

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
Method SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18) and DUP-2 (480-160015-19).

Method SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), EQUIPMENT BLANK (480-160015-20) and FIELD BLANK (480-160015-21).

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

Narrative

Job Narrative
480-160015-2

Comments
No additional comments.

Receipt

Job ID: 480-160015-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

The samples were received on 9/28/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.4º C, 2.6º C, 2.7º C, 3.0º C and 3.3º C.

Receipt Exceptions
The following samples were received with insufficient preservation: 3.0mL of HNO3 was added by the laboratory, and the samples pH was adjusted to <2.DUP-2 (480-160015-19) and FIELD BLANK (480-160015-21)

RAD
Method 903.0: Radium-226 prep batch 160-445304-

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.
D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19), EQUIPMENT BLANK (480-160015-20), (LCS 160-445304/1-A), (LCSD 160-445304/2-A) and (MB 160-445304/23-A)

Methods 903.0, 9315: Radium-228 Prep Batch 160-445251
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.
FIELD BLANK (480-160015-21), (LCS 160-445251/1-A), (MB 160-445251/16-A), (240-119966-T-1-A) and (240-119966-U-1-C DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-445256
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.
FIELD BLANK (480-160015-21), (LCS 160-445256/1-A), (MB 160-445256/16-A), (240-119966-T-1-B) and (240-119966-U-1-B DU)

Method 904.0: Radium-228 prep batch 160-445315
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.
D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19), EQUIPMENT BLANK (480-160015-20), (LCS 160-445315/1-A), (LCSD 160-445315/2-A) and (MB 160-445315/23-A)

Method 904.0: Radium-228 Prep Batch: 160-445315
The following sample did not meet the requested limit (RL) due to the reduced sample volume attributed to the presence of matrix interferences (see Prep NCM 160-179572). The data have been reported with this narrative.
D-7 (480-160015-11)

Method PrecSep_0: Radium 228 Prep Batch-160-445256:
The following samples were prepared at a reduced aliquot due to limited volume: FIELD BLANK (480-160015-21).

Method PrecSep_0: Radium 228 Prep Batch 160-445315:
The following samples were prepared at a reduced aliquot due to insufficient volume: D-1D (480-160015-1), D-1S (480-160015-2), D-2D

Job ID: 480-160015-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

(480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19) and EQUIPMENT BLANK (480-160015-20). Sample 480-160015-A-11 was reduced due to sediment and yellow discoloration. Samples 480-160015-A-4, 480-160015-A-13, 480-160015-A-17 and 480-160015-A-18 had light yellow discoloration.

Method PrecSep_0: Radium 228 Prep Batch 160-445315:
Insufficient sample volume was available to perform a sample duplicate for the following samples: D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19) and EQUIPMENT BLANK (480-160015-20). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-445251:
The following samples were prepared at a reduced aliquot due to limited volume: FIELD BLANK (480-160015-21).

Method PrecSep-21: Radium 226 Prep Batch 160-445304:
The following samples were prepared at a reduced aliquot due to insufficient volume: D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19) and EQUIPMENT BLANK (480-160015-20). Sample 480-160015-A-11 was reduced due to sediment and yellow discoloration. Samples 480-160015-A-4, 480-160015-A-13, 480-160015-A-17 and 480-160015-A-18 had light yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-445304:
Insufficient sample volume was available to perform a sample duplicate for the following samples: D-1D (480-160015-1), D-1S (480-160015-2), D-2D (480-160015-3), D-2S (480-160015-4), D-3D (480-160015-5), D-3S (480-160015-6), D-4D (480-160015-7), D-4S (480-160015-8), D-5D (480-160015-9), D-5S2 (480-160015-10), D-7 (480-160015-11), D-8 (480-160015-12), D-9 (480-160015-13), U-4D (480-160015-14), U-4S (480-160015-15), U-5D (480-160015-16), U-5S (480-160015-17), DUP-1 (480-160015-18), DUP-2 (480-160015-19) and EQUIPMENT BLANK (480-160015-20). 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.

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-160015-1

Client Sample ID: D-1D — Lab Sample ID: 480-160015-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.048		0.0020		mg/L	1		6010D	Total/NA
Boron	0.020		0.020		mg/L	1		6010D	Total/NA
Calcium	86.9		0.50		mg/L	1		6010D	Total/NA
Chloride	28.6		1.0		mg/L	2		300.0	Total/NA
Sulfate	27.2		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	387		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	15.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-1S — Lab Sample ID: 480-160015-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.056		0.0020		mg/L	1		6010D	Total/NA
Boron	0.035		0.020		mg/L	1		6010D	Total/NA
Calcium	104		0.50		mg/L	1		6010D	Total/NA
Chloride	32.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	21.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	512		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	15.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2D — Lab Sample ID: 480-160015-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.048		0.0020		mg/L	1		6010D	Total/NA
Calcium	81.5		0.50		mg/L	1		6010D	Total/NA
Chloride	31.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	21.2		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	424		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2S — Lab Sample ID: 480-160015-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.048		0.0020		mg/L	1		6010D	Total/NA
Boron	0.025		0.020		mg/L	1		6010D	Total/NA
Calcium	104		0.50		mg/L	1		6010D	Total/NA
Chloride	41.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	19.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	435		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3D — Lab Sample ID: 480-160015-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.048		0.0020		mg/L	1		6010D	Total/NA
Boron	0.039		0.020		mg/L	1		6010D	Total/NA
Calcium	88.0		0.50		mg/L	1		6010D	Total/NA
Chloride	55.1		2.5		mg/L	5		300.0	Total/NA
Sulfate	31.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	411		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-3D (Continued) — Lab Sample ID: 480-160015-5

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3S — Lab Sample ID: 480-160015-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.060		0.0020		mg/L	1		6010D	Total/NA
Boron	0.40		0.020		mg/L	1		6010D	Total/NA
Calcium	118		0.50		mg/L	1		6010D	Total/NA
Chloride	104		2.5		mg/L	5		300.0	Total/NA
Sulfate	43.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	558		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4D — Lab Sample ID: 480-160015-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.065		0.0020		mg/L	1		6010D	Total/NA
Calcium	97.8		0.50		mg/L	1		6010D	Total/NA
Chloride	49.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	22.3		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	447		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4S — Lab Sample ID: 480-160015-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.072		0.0020		mg/L	1		6010D	Total/NA
Boron	0.020		0.020		mg/L	1		6010D	Total/NA
Calcium	100		0.50		mg/L	1		6010D	Total/NA
Chloride	50.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	22.9		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	424		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5D — Lab Sample ID: 480-160015-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.052		0.0020		mg/L	1		6010D	Total/NA
Calcium	95.7		0.50		mg/L	1		6010D	Total/NA
Chloride	30.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	29.8		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	428		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	17.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5S2 — Lab Sample ID: 480-160015-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.080		0.0020		mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-5S2 (Continued) — Lab Sample ID: 480-160015-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.15		0.020		mg/L	1		6010D	Total/NA
Calcium	131		0.50		mg/L	1		6010D	Total/NA
Chloride	125		2.5		mg/L	5		300.0	Total/NA
Sulfate	57.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	516		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	17.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-7 — Lab Sample ID: 480-160015-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.21		0.0020		mg/L	1		6010D	Total/NA
Boron	0.046		0.020		mg/L	1		6010D	Total/NA
Calcium	171		0.50		mg/L	1		6010D	Total/NA
Chromium	0.038		0.0040		mg/L	1		6010D	Total/NA
Lead	0.011		0.010		mg/L	1		6010D	Total/NA
Arsenic	7.3		1.0		ug/L	1		6020B	Total/NA
Cobalt	16.7		0.30		ug/L	1		6020B	Total/NA
Molybdenum	1.2		1.0		ug/L	1		6020B	Total/NA
Thallium	0.91		0.20		ug/L	1		6020B	Total/NA
Chloride	42.4		2.5		mg/L	5		300.0	Total/NA
Sulfate	49.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	660		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-8 — Lab Sample ID: 480-160015-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.068		0.0020		mg/L	1		6010D	Total/NA
Calcium	95.9		0.50		mg/L	1		6010D	Total/NA
Chloride	35.4		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.090		0.050		mg/L	1		300.0	Total/NA
Sulfate	35.4		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	515		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-9 — Lab Sample ID: 480-160015-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.049		0.0020		mg/L	1		6010D	Total/NA
Calcium	75.9		0.50		mg/L	1		6010D	Total/NA
Cobalt	0.30		0.30		ug/L	1		6020B	Total/NA
Chloride	28.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	21.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	386		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.6	HF	0.001		Degrees C	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 Rosemount - CCR Groundwater

Job ID: 480-160015-1

Client Sample ID: U-4D — Lab Sample ID: 480-160015-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.042		0.0020		mg/L	1		6010D	Total/NA
Calcium	90.7		0.50		mg/L	1		6010D	Total/NA
Chloride	34.2		1.0		mg/L	2		300.0	Total/NA
Sulfate	23.8		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	320		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	16.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4S — Lab Sample ID: 480-160015-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.032		0.0020		mg/L	1		6010D	Total/NA
Calcium	72.0		0.50		mg/L	1		6010D	Total/NA
Chromium	0.0076		0.0040		mg/L	1		6010D	Total/NA
Chloride	51.4		1.0		mg/L	2		300.0	Total/NA
Sulfate	10.3		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	317		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	17.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5D — Lab Sample ID: 480-160015-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.057		0.0020		mg/L	1		6010D	Total/NA
Calcium	88.3		0.50		mg/L	1		6010D	Total/NA
Chloride	25.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	26.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	419		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5S — Lab Sample ID: 480-160015-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.067		0.0020		mg/L	1		6010D	Total/NA
Calcium	95.4		0.50		mg/L	1		6010D	Total/NA
Cobalt	0.36		0.30		ug/L	1		6020B	Total/NA
Chloride	67.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	20.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	453		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUP-1 — Lab Sample ID: 480-160015-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.067		0.0020		mg/L	1		6010D	Total/NA
Boron	0.020		0.020		mg/L	1		6010D	Total/NA
Calcium	95.9		0.50		mg/L	1		6010D	Total/NA
Cobalt	0.53		0.30		ug/L	1		6020B	Total/NA
Chloride	66.6		1.0		mg/L	2		300.0	Total/NA
Sulfate	20.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	524		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUP-1 (Continued)
Lab Sample ID: 480-160015-18

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUP-2
Lab Sample ID: 480-160015-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.060		0.0020		mg/L	1		6010D	Total/NA
Boron	0.40		0.020		mg/L	1		6010D	Total/NA
Calcium	120		0.50		mg/L	1		6010D	Total/NA
Chloride	105		2.5		mg/L	5		300.0	Total/NA
Sulfate	44.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	466		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: EQUIPMENT BLANK
Lab Sample ID: 480-160015-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.078		0.050		mg/L	1		300.0	Total/NA
pH	5.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK
Lab Sample ID: 480-160015-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.074		0.050		mg/L	1		300.0	Total/NA
pH	5.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-1D

Date Collected: 09/26/19 09:30
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.048**		0.0020		mg/L		10/03/19 08:40	10/03/19 23:41	1
Boron	**0.020**		0.020		mg/L		10/03/19 08:40	10/03/19 23:41	1
Calcium	**86.9**		0.50		mg/L		10/03/19 08:40	10/03/19 23:41	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/03/19 23:41	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/03/19 23:41	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/03/19 23:41	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:16	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:16	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:16	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:16	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:16	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:16	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:16	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:16	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28.6**		1.0		mg/L			10/08/19 19:25	2
Fluoride	ND		0.10		mg/L			10/08/19 19:25	2
Sulfate	**27.2**		4.0		mg/L			10/08/19 19:25	2
Total Dissolved Solids	**387**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			10/10/19 11:55	1
Temperature	**15.4**	**HF**	0.001		Degrees C			10/10/19 11:55	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.189	U	0.141	0.142	1.00	0.207	pCi/L	10/07/19 12:52	10/29/19 07:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.7*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:07*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.16**		0.474	0.486	1.00	0.679	pCi/L	10/07/19 13:42	10/23/19 17:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.7*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*
Y Carrier	*79.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*

Client Sample ID: D-1S

Date Collected: 09/26/19 09:10
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.056**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:00	1
Boron	**0.035**		0.020		mg/L		10/03/19 08:40	10/04/19 00:00	1
Calcium	**104**		0.50		mg/L		10/03/19 08:40	10/04/19 00:00	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:00	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:00	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:00	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:18	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:18	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:18	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:18	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:18	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:18	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:18	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:18	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**32.1**		1.0		mg/L			10/08/19 19:40	2
Fluoride	ND		0.10		mg/L			10/08/19 19:40	2
Sulfate	**21.5**		4.0		mg/L			10/08/19 19:40	2
Total Dissolved Solids	**512**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			10/10/19 11:58	1
Temperature	**15.7**	**HF**	0.001		Degrees C			10/10/19 11:58	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.362**		0.179	0.182	1.00	0.232	pCi/L	10/07/19 12:52	10/29/19 07:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.8*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:07*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.695**		0.432	0.437	1.00	0.663	pCi/L	10/07/19 13:42	10/23/19 17:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.8*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*
Y Carrier	*78.1*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*

Client Sample ID: D-2D

Date Collected: 09/26/19 10:10
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.048**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:03	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 00:03	1
Calcium	**81.5**		0.50		mg/L		10/03/19 08:40	10/04/19 00:03	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:03	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:03	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:03	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:29	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:29	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:29	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:29	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:29	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:29	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:29	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:29	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**31.1**		1.0		mg/L			10/08/19 19:55	2
Fluoride	ND		0.10		mg/L			10/08/19 19:55	2
Sulfate	**21.2**		4.0		mg/L			10/08/19 19:55	2
Total Dissolved Solids	**424**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:01	1
Temperature	**16.4**	**HF**	0.001		Degrees C			10/10/19 12:01	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.262**		0.161	0.163	1.00	0.225	pCi/L	10/07/19 12:52	10/29/19 07:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0854	U	0.392	0.392	1.00	0.685	pCi/L	10/07/19 13:42	10/23/19 17:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*
Y Carrier	*77.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*

Client Sample ID: D-2S

Date Collected: 09/26/19 10:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-4

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.048**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:18	1
Boron	**0.025**		0.020		mg/L		10/03/19 08:40	10/04/19 00:18	1
Calcium	**104**		0.50		mg/L		10/03/19 08:40	10/04/19 00:18	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:18	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:18	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:18	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:32	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:32	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:32	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:32	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:32	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:32	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:32	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:32	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**41.7**		1.0		mg/L			10/08/19 20:09	2
Fluoride	ND		0.10		mg/L			10/08/19 20:09	2
Sulfate	**19.5**		4.0		mg/L			10/08/19 20:09	2
Total Dissolved Solids	**435**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.3**	**HF**	0.1		SU			10/10/19 12:04	1
Temperature	**16.7**	**HF**	0.001		Degrees C			10/10/19 12:04	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.155	U	0.136	0.136	1.00	0.207	pCi/L	10/07/19 12:52	10/29/19 07:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.333	U	0.406	0.407	1.00	0.671	pCi/L	10/07/19 13:42	10/23/19 17:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*
Y Carrier	*80.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:00*	*1*

Client Sample ID: D-3D

Date Collected: 09/25/19 14:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-5

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.048**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:22	1
Boron	**0.039**		0.020		mg/L		10/03/19 08:40	10/04/19 00:22	1
Calcium	**88.0**		0.50		mg/L		10/03/19 08:40	10/04/19 00:22	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:22	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:22	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:22	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:41	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:41	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:41	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:41	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:41	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:41	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:41	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:41	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**55.1**		2.5		mg/L			10/08/19 21:37	5
Fluoride	ND		0.25		mg/L			10/08/19 21:37	5
Sulfate	**31.1**		10.0		mg/L			10/08/19 21:37	5
Total Dissolved Solids	**411**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:07	1
Temperature	**16.2**	**HF**	0.001		Degrees C			10/10/19 12:07	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.181	U	0.134	0.135	1.00	0.192	pCi/L	10/07/19 12:52	10/29/19 07:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.378	U	0.399	0.401	1.00	0.653	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-3S

Date Collected: 09/25/19 13:40
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-6
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.060**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:26	1
Boron	**0.40**		0.020		mg/L		10/03/19 08:40	10/04/19 00:26	1
Calcium	**118**		0.50		mg/L		10/03/19 08:40	10/04/19 00:26	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:26	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:26	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:26	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:43	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:43	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:43	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:43	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:43	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:43	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:43	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**104**		2.5		mg/L			10/08/19 21:51	5
Fluoride	ND		0.25		mg/L			10/08/19 21:51	5
Sulfate	**43.3**		10.0		mg/L			10/08/19 21:51	5
Total Dissolved Solids	**558**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:12	1
Temperature	**16.0**	**HF**	0.001		Degrees C			10/10/19 12:12	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.285**		0.160	0.162	1.00	0.213	pCi/L	10/07/19 12:52	10/29/19 07:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.371	U	0.391	0.393	1.00	0.639	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*77.4*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-4D

Date Collected: 09/26/19 10:50
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-7

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.065**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:29	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 00:29	1
Calcium	**97.8**		0.50		mg/L		10/03/19 08:40	10/04/19 00:29	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:29	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:29	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:29	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:46	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:46	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:46	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:46	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:46	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:46	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:46	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**49.8**		1.0		mg/L			10/08/19 22:06	2
Fluoride	ND		0.10		mg/L			10/08/19 22:06	2
Sulfate	**22.3**		4.0		mg/L			10/08/19 22:06	2
Total Dissolved Solids	**447**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:15	1
Temperature	**16.0**	**HF**	0.001		Degrees C			10/10/19 12:15	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.274**		0.139	0.141	1.00	0.164	pCi/L	10/07/19 12:52	10/29/19 07:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.6*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.290	U	0.363	0.364	1.00	0.602	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*83.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-4S

Date Collected: 09/26/19 10:40
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-8

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.072**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:33	1
Boron	**0.020**		0.020		mg/L		10/03/19 08:40	10/04/19 00:33	1
Calcium	**100**		0.50		mg/L		10/03/19 08:40	10/04/19 00:33	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:33	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:33	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:33	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:48	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:48	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:48	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:48	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:48	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:48	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:48	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:48	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**50.1**		1.0		mg/L			10/08/19 22:20	2
Fluoride	ND		0.10		mg/L			10/08/19 22:20	2
Sulfate	**22.9**		4.0		mg/L			10/08/19 22:20	2
Total Dissolved Solids	**424**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:18	1
Temperature	**16.3**	**HF**	0.001		Degrees C			10/10/19 12:18	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.227**		0.148	0.149	1.00	0.209	pCi/L	10/07/19 12:52	10/29/19 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:09*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.23**		0.455	0.469	1.00	0.629	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*80.4*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-5D

Date Collected: 09/25/19 13:15
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-9

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.052**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:37	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 00:37	1
Calcium	**95.7**		0.50		mg/L		10/03/19 08:40	10/04/19 00:37	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:37	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:37	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:37	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:50	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:50	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:50	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:50	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:50	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:50	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:50	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:50	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**30.7**		1.0		mg/L			10/08/19 22:35	2
Fluoride	ND		0.10		mg/L			10/08/19 22:35	2
Sulfate	**29.8**		4.0		mg/L			10/08/19 22:35	2
Total Dissolved Solids	**428**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:21	1
Temperature	**17.1**	**HF**	0.001		Degrees C			10/10/19 12:21	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.306**		0.159	0.161	1.00	0.201	pCi/L	10/07/19 12:52	10/29/19 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.8*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:09*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.533	U	0.352	0.356	1.00	0.539	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.8*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*80.7*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-5S2

Date Collected: 09/25/19 13:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-10

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.080**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:40	1
Boron	**0.15**		0.020		mg/L		10/03/19 08:40	10/04/19 00:40	1
Calcium	**131**		0.50		mg/L		10/03/19 08:40	10/04/19 00:40	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:40	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:40	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:40	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:53	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:53	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:53	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:53	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:53	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:53	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:53	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:53	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**125**		2.5		mg/L			10/08/19 22:50	5
Fluoride	ND		0.25		mg/L			10/08/19 22:50	5
Sulfate	**57.3**		10.0		mg/L			10/08/19 22:50	5
Total Dissolved Solids	**516**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:24	1
Temperature	**17.3**	**HF**	0.001		Degrees C			10/10/19 12:24	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.235**		0.147	0.148	1.00	0.200	pCi/L	10/07/19 12:52	10/29/19 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.3*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:09*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.498	U	0.372	0.375	1.00	0.583	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.3*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*79.3*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-7

Date Collected: 09/26/19 08:30
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-11

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.21**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:44	1
Boron	**0.046**		0.020		mg/L		10/03/19 08:40	10/04/19 00:44	1
Calcium	**171**		0.50		mg/L		10/03/19 08:40	10/04/19 00:44	1
Chromium	**0.038**		0.0040		mg/L		10/03/19 08:40	10/04/19 00:44	1
Lead	**0.011**		0.010		mg/L		10/03/19 08:40	10/04/19 00:44	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:44	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:55	1
Arsenic	**7.3**		1.0		ug/L		10/03/19 08:25	10/03/19 14:55	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:55	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:55	1
Cobalt	**16.7**		0.30		ug/L		10/03/19 08:25	10/03/19 14:55	1
Molybdenum	**1.2**		1.0		ug/L		10/03/19 08:25	10/03/19 14:55	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:55	1
Thallium	**0.91**		0.20		ug/L		10/03/19 08:25	10/03/19 14:55	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**42.4**		2.5		mg/L			10/09/19 00:03	5
Fluoride	ND		0.25		mg/L			10/09/19 00:03	5
Sulfate	**49.0**		10.0		mg/L			10/09/19 00:03	5
Total Dissolved Solids	**660**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			10/10/19 12:27	1
Temperature	**16.7**	**HF**	0.001		Degrees C			10/10/19 12:27	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**2.04**		0.485	0.519	1.00	0.407	pCi/L	10/07/19 12:52	10/29/19 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*61.9*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:09*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.13	U G	0.885	0.891	1.00	1.41	pCi/L	10/07/19 13:42	10/23/19 17:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*61.9*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*
Y Carrier	*82.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:01*	*1*

Client Sample ID: D-8
Date Collected: 09/26/19 11:10
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-12
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.068**		0.0020		mg/L		10/03/19 08:40	10/04/19 00:48	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 00:48	1
Calcium	**95.9**		0.50		mg/L		10/03/19 08:40	10/04/19 00:48	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 00:48	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 00:48	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 00:48	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:57	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:57	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:57	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:57	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:57	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:57	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:57	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**35.4**		0.50		mg/L			10/09/19 12:23	1
Fluoride	**0.090**		0.050		mg/L			10/09/19 12:23	1
Sulfate	**35.4**		2.0		mg/L			10/09/19 12:23	1
Total Dissolved Solids	**515**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			10/10/19 12:29	1
Temperature	**16.5**	**HF**	0.001		Degrees C			10/10/19 12:29	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.193	U	0.165	0.166	1.00	0.254	pCi/L	10/07/19 12:52	10/29/19 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.7*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:09*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.524	U	0.454	0.457	1.00	0.730	pCi/L	10/07/19 13:42	10/23/19 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.7*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*
Y Carrier	*86.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*

Client Sample ID: D-9

Date Collected: 09/26/19 11:40
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-13

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.049**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:03	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:03	1
Calcium	**75.9**		0.50		mg/L		10/03/19 08:40	10/04/19 01:03	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:03	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:03	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:03	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:59	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:59	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:59	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:59	1
Cobalt	**0.30**		0.30		ug/L		10/03/19 08:25	10/03/19 14:59	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:59	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:59	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:59	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28.7**		1.0		mg/L			10/09/19 00:17	2
Fluoride	ND		0.10		mg/L			10/09/19 00:17	2
Sulfate	**21.5**		4.0		mg/L			10/09/19 00:17	2
Total Dissolved Solids	**386**		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:32	1
Temperature	**16.6**	**HF**	0.001		Degrees C			10/10/19 12:32	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.123	U	0.155	0.155	1.00	0.257	pCi/L	10/07/19 12:52	10/29/19 07:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.9*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:10*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.232	U	0.476	0.476	1.00	0.809	pCi/L	10/07/19 13:42	10/23/19 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.9*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*
Y Carrier	*84.5*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*

Client Sample ID: U-4D

Date Collected: 09/25/19 11:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-14

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.042**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:06	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:06	1
Calcium	**90.7**		0.50		mg/L		10/03/19 08:40	10/04/19 01:06	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:06	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:06	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:06	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:02	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:02	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:02	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:02	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:02	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:02	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:02	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**34.2**		1.0		mg/L			10/09/19 00:32	2
Fluoride	ND		0.10		mg/L			10/09/19 00:32	2
Sulfate	**23.8**		4.0		mg/L			10/09/19 00:32	2
Total Dissolved Solids	**320**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:35	1
Temperature	**16.9**	**HF**	0.001		Degrees C			10/10/19 12:35	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.217**		0.146	0.147	1.00	0.208	pCi/L	10/07/19 12:52	10/29/19 07:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.4*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:10*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0842	U	0.397	0.397	1.00	0.710	pCi/L	10/07/19 13:42	10/23/19 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.4*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*
Y Carrier	*82.2*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:03*	*1*

Client Sample ID: U-4S

Date Collected: 09/25/19 10:15
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-15

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.032**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:10	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:10	1
Calcium	**72.0**		0.50		mg/L		10/03/19 08:40	10/04/19 01:10	1
Chromium	**0.0076**		0.0040		mg/L		10/03/19 08:40	10/04/19 01:10	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:10	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:10	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:11	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:11	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:11	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:11	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:11	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:11	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:11	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:11	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**51.4**		1.0		mg/L			10/09/19 00:46	2
Fluoride	ND		0.10		mg/L			10/09/19 00:46	2
Sulfate	**10.3**		4.0		mg/L			10/09/19 00:46	2
Total Dissolved Solids	**317**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:38	1
Temperature	**17.5**	**HF**	0.001		Degrees C			10/10/19 12:38	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.178	U	0.138	0.139	1.00	0.207	pCi/L	10/07/19 12:52	10/29/19 07:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.8*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:11*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.342	U	0.369	0.370	1.00	0.604	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.8*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*84.5*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: U-5D

Date Collected: 09/25/19 12:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-16

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.057**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:14	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:14	1
Calcium	**88.3**		0.50		mg/L		10/03/19 08:40	10/04/19 01:14	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:14	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:14	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:14	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:13	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:13	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:13	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:13	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:13	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:13	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:13	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:13	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**25.8**		1.0		mg/L			10/09/19 01:01	2
Fluoride	ND		0.10		mg/L			10/09/19 01:01	2
Sulfate	**26.4**		4.0		mg/L			10/09/19 01:01	2
Total Dissolved Solids	**419**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/10/19 12:44	1
Temperature	**18.5**	**HF**	0.001		Degrees C			10/10/19 12:44	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.241**		0.146	0.147	1.00	0.197	pCi/L	10/07/19 12:52	10/29/19 07:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.9*		*40 - 110*	*10/07/19 12:52*	*10/29/19 07:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0837	U	0.388	0.388	1.00	0.677	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.9*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*83.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: U-5S

Date Collected: 09/25/19 11:45
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-17

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.067**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:18	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:18	1
Calcium	**95.4**		0.50		mg/L		10/03/19 08:40	10/04/19 01:18	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:18	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:18	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:18	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:16	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:16	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:16	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:16	1
Cobalt	**0.36**		0.30		ug/L		10/03/19 08:25	10/03/19 15:16	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:16	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:16	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:16	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**67.1**		1.0		mg/L			10/09/19 01:16	2
Fluoride	ND		0.10		mg/L			10/09/19 01:16	2
Sulfate	**20.1**		4.0		mg/L			10/09/19 01:16	2
Total Dissolved Solids	**453**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			10/10/19 12:50	1
Temperature	**18.0**	**HF**	0.001		Degrees C			10/10/19 12:50	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.213**		0.143	0.144	1.00	0.202	pCi/L	10/07/19 12:52	10/29/19 09:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.4*		*40 - 110*	*10/07/19 12:52*	*10/29/19 09:27*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.102	U	0.391	0.391	1.00	0.709	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.4*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*81.9*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: DUP-1

Date Collected: 09/25/19 00:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-18

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.067**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:21	1
Boron	**0.020**		0.020		mg/L		10/03/19 08:40	10/04/19 01:21	1
Calcium	**95.9**		0.50		mg/L		10/03/19 08:40	10/04/19 01:21	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:21	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:21	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:21	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:18	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:18	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:18	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:18	1
Cobalt	**0.53**		0.30		ug/L		10/03/19 08:25	10/03/19 15:18	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:18	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:18	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:18	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**66.6**		1.0		mg/L			10/09/19 01:30	2
Fluoride	ND		0.10		mg/L			10/09/19 01:30	2
Sulfate	**20.1**		4.0		mg/L			10/09/19 01:30	2
Total Dissolved Solids	**524**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			10/10/19 12:52	1
Temperature	**18.1**	**HF**	0.001		Degrees C			10/10/19 12:52	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.479**		0.188	0.193	1.00	0.223	pCi/L	10/07/19 12:52	10/29/19 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.3*		*40 - 110*	*10/07/19 12:52*	*10/29/19 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.341	U	0.436	0.437	1.00	0.722	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.3*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*82.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: DUP-2

Date Collected: 09/25/19 00:00
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-19

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.060**		0.0020		mg/L		10/03/19 08:40	10/04/19 01:25	1
Boron	**0.40**		0.020		mg/L		10/03/19 08:40	10/04/19 01:25	1
Calcium	**120**		0.50		mg/L		10/03/19 08:40	10/04/19 01:25	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:25	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:25	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:25	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:20	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:20	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:20	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:20	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:20	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:20	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:20	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**105**		2.5		mg/L			10/09/19 01:45	5
Fluoride	ND		0.25		mg/L			10/09/19 01:45	5
Sulfate	**44.0**		10.0		mg/L			10/09/19 01:45	5
Total Dissolved Solids	**466**		10.0		mg/L			10/02/19 11:52	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			10/10/19 12:55	1
Temperature	**18.5**	**HF**	0.001		Degrees C			10/10/19 12:55	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.217**		0.142	0.144	1.00	0.200	pCi/L	10/07/19 12:52	10/29/19 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*10/07/19 12:52*	*10/29/19 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.703**		0.407	0.412	1.00	0.617	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*83.0*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: EQUIPMENT BLANK
Lab Sample ID: 480-160015-20

Date Collected: 09/26/19 12:00
Matrix: Water
Date Received: 09/28/19 10:00

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		10/03/19 08:40	10/04/19 01:29	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/04/19 01:29	1
Calcium	ND		0.50		mg/L		10/03/19 08:40	10/04/19 01:29	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/04/19 01:29	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/04/19 01:29	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/04/19 01:29	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:23	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:23	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:23	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:23	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:23	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:23	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:23	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:23	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			10/09/19 01:59	1
Fluoride	**0.078**		0.050		mg/L			10/09/19 01:59	1
Sulfate	ND		2.0		mg/L			10/09/19 01:59	1
Total Dissolved Solids	ND		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**5.4**	**HF**	0.1		SU			10/10/19 15:55	1
Temperature	**19.2**	**HF**	0.001		Degrees C			10/10/19 15:55	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.130	U	0.126	0.127	1.00	0.200	pCi/L	10/07/19 12:52	10/29/19 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.6*		*40 - 110*	*10/07/19 12:52*	*10/29/19 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.294	U	0.306	0.307	1.00	0.499	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*
Y Carrier	*88.6*		*40 - 110*	*10/07/19 13:42*	*10/23/19 17:04*	*1*

Client Sample ID: FIELD BLANK

Date Collected: 09/26/19 11:50
Date Received: 09/28/19 10:00

Lab Sample ID: 480-160015-21

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		10/03/19 08:40	10/03/19 19:16	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/03/19 19:16	1
Calcium	ND		0.50		mg/L		10/03/19 08:40	10/03/19 19:16	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/03/19 19:16	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/03/19 19:16	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/03/19 19:16	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:30	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:30	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:30	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:30	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:30	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:30	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:30	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:30	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			10/09/19 12:37	1
Fluoride	**0.074**		0.050		mg/L			10/09/19 12:37	1
Sulfate	ND		2.0		mg/L			10/09/19 12:37	1
Total Dissolved Solids	ND		10.0		mg/L			10/02/19 10:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**5.2**	**HF**	0.1		SU			10/10/19 15:58	1
Temperature	**19.4**	**HF**	0.001		Degrees C			10/10/19 15:58	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.213**		0.135	0.136	1.00	0.186	pCi/L	10/07/19 08:01	10/29/19 09:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*10/07/19 08:01*	*10/29/19 09:30*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.249	U	0.320	0.321	1.00	0.532	pCi/L	10/07/19 08:31	10/21/19 16:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*10/07/19 08:31*	*10/21/19 16:21*	*1*
Y Carrier	*80.0*		*40 - 110*	*10/07/19 08:31*	*10/21/19 16:21*	*1*

Tracer/Carrier Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-160015-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)						
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)						
480-160015-1	D-1D	84.7						
480-160015-2	D-1S	82.8						
480-160015-3	D-2D	85.3						
480-160015-4	D-2S	82.5						
480-160015-5	D-3D	82.5						
480-160015-6	D-3S	80.8						
480-160015-7	D-4D	85.6						
480-160015-8	D-4S	85.3						
480-160015-9	D-5D	89.8						
480-160015-10	D-5S2	87.3						
480-160015-11	D-7	61.9						
480-160015-12	D-8	79.7						
480-160015-13	D-9	72.9						
480-160015-14	U-4D	92.4						
480-160015-15	U-4S	91.8						
480-160015-16	U-5D	85.9						
480-160015-17	U-5S	86.4						
480-160015-18	DUP-1	89.3						
480-160015-19	DUP-2	87.9						
480-160015-20	EQUIPMENT BLANK	98.6						
480-160015-21	FIELD BLANK	86.7						
LCS 160-445251/1-A	Lab Control Sample	89.0						
LCS 160-445304/1-A	Lab Control Sample	88.4						
LCSD 160-445304/2-A	Lab Control Sample Dup	88.7						
MB 160-445251/16-A	Method Blank	81.6						
MB 160-445304/23-A	Method Blank	99.7						

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)						
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)					
480-160015-1	D-1D	84.7	79.6					
480-160015-2	D-1S	82.8	78.1					
480-160015-3	D-2D	85.3	77.0					
480-160015-4	D-2S	82.5	80.0					
480-160015-5	D-3D	82.5	81.5					
480-160015-6	D-3S	80.8	77.4					
480-160015-7	D-4D	85.6	83.0					
480-160015-8	D-4S	85.3	80.4					
480-160015-9	D-5D	89.8	80.7					
480-160015-10	D-5S2	87.3	79.3					
480-160015-11	D-7	61.9	82.6					
480-160015-12	D-8	79.7	86.0					
480-160015-13	D-9	72.9	84.5					
480-160015-14	U-4D	92.4	82.2					

Tracer/Carrier Summary

Client: Waste Connections, Inc. Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Method: 904.0 - Radium-228 (GFPC) (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
480-160015-15	U-4S	91.8	84.5
480-160015-16	U-5D	85.9	83.0
480-160015-17	U-5S	86.4	81.9
480-160015-18	DUP-1	89.3	82.6
480-160015-19	DUP-2	87.9	83.0
480-160015-20	EQUIPMENT BLANK	98.6	88.6
480-160015-21	FIELD BLANK	86.7	80.0
LCS 160-445256/1-A	Lab Control Sample	89.0	77.4
LCS 160-445315/1-A	Lab Control Sample	88.4	80.7
LCSD 160-445315/2-A	Lab Control Sample Dup	88.7	77.8
MB 160-445256/16-A	Method Blank	81.6	80.0
MB 160-445315/23-A	Method Blank	99.7	83.4

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-495465/1-A
Matrix: Water
Analysis Batch: 495874

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 495465

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		10/03/19 08:40	10/03/19 23:34	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/03/19 23:34	1
Calcium	ND		0.50		mg/L		10/03/19 08:40	10/03/19 23:34	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/03/19 23:34	1
Lead	ND		0.010		mg/L		10/03/19 08:40	10/03/19 23:34	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/03/19 23:34	1

Lab Sample ID: LCS 480-495465/2-A
Matrix: Water
Analysis Batch: 495874

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 495465

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.200	0.209		mg/L		104	80 - 120
Boron	0.200	0.209		mg/L		104	80 - 120
Calcium	10.0	10.24		mg/L		102	80 - 120
Chromium	0.200	0.204		mg/L		102	80 - 120
Lead	0.200	0.200		mg/L		100	80 - 120

Lab Sample ID: 480-160015-1 MS
Matrix: Water
Analysis Batch: 495874

Client Sample ID: D-1D
Prep Type: Total/NA
Prep Batch: 495465

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.048		0.200	0.247		mg/L		100	75 - 125
Boron	0.020		0.200	0.225		mg/L		103	75 - 125
Calcium	86.9		10.0	95.07	4	mg/L		82	75 - 125
Chromium	ND		0.200	0.199		mg/L		98	75 - 125
Lead	ND		0.200	0.196		mg/L		98	75 - 125

Lab Sample ID: 480-160015-1 MSD
Matrix: Water
Analysis Batch: 495874

Client Sample ID: D-1D
Prep Type: Total/NA
Prep Batch: 495465

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.048		0.200	0.244		mg/L		98	75 - 125	1	20
Boron	0.020		0.200	0.219		mg/L		100	75 - 125	3	20
Calcium	86.9		10.0	96.31	4	mg/L		94	75 - 125	1	20
Chromium	ND		0.200	0.196		mg/L		96	75 - 125	1	20
Lead	ND		0.200	0.191		mg/L		95	75 - 125	2	20

Lab Sample ID: MB 480-495466/1-A
Matrix: Water
Analysis Batch: 495872

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 495466

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		10/03/19 08:40	10/03/19 19:09	1
Boron	ND		0.020		mg/L		10/03/19 08:40	10/03/19 19:09	1
Calcium	ND		0.50		mg/L		10/03/19 08:40	10/03/19 19:09	1
Chromium	ND		0.0040		mg/L		10/03/19 08:40	10/03/19 19:09	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: MB 480-495466/1-A
Matrix: Water
Analysis Batch: 495872

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 495466

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.010		mg/L		10/03/19 08:40	10/03/19 19:09	1
Lithium	ND		0.030		mg/L		10/03/19 08:40	10/03/19 19:09	1

Lab Sample ID: LCS 480-495466/2-A
Matrix: Water
Analysis Batch: 495872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 495466

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.200	0.204		mg/L		102	80 - 120
Boron	0.200	0.205		mg/L		102	80 - 120
Calcium	10.0	9.92		mg/L		99	80 - 120
Chromium	0.200	0.199		mg/L		100	80 - 120
Lead	0.200	0.195		mg/L		97	80 - 120

Lab Sample ID: LCSD 480-495466/25-A
Matrix: Water
Analysis Batch: 495872

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 495466

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.200	0.203		mg/L		101	80 - 120	1	20
Boron	0.200	0.203		mg/L		101	80 - 120	1	20
Calcium	10.0	9.95		mg/L		100	80 - 120	0	20
Chromium	0.200	0.199		mg/L		100	80 - 120	0	20
Lead	0.200	0.193		mg/L		96	80 - 120	1	20

Lab Sample ID: 480-160015-21 MS
Matrix: Water
Analysis Batch: 495872

Client Sample ID: FIELD BLANK
Prep Type: Total/NA
Prep Batch: 495466

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	ND		0.200	0.195		mg/L		98	75 - 125
Boron	ND		0.200	0.196		mg/L		98	75 - 125
Calcium	ND		10.0	9.63		mg/L		96	75 - 125
Chromium	ND		0.200	0.194		mg/L		97	75 - 125
Lead	ND		0.200	0.190		mg/L		95	75 - 125

Lab Sample ID: 480-160015-21 MSD
Matrix: Water
Analysis Batch: 495872

Client Sample ID: FIELD BLANK
Prep Type: Total/NA
Prep Batch: 495466

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	ND		0.200	0.201		mg/L		100	75 - 125	3	20
Boron	ND		0.200	0.202		mg/L		101	75 - 125	3	20
Calcium	ND		10.0	10.94		mg/L		109	75 - 125	13	20
Chromium	ND		0.200	0.219		mg/L		110	75 - 125	12	20
Lead	ND		0.200	0.215		mg/L		107	75 - 125	12	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 480-495492/1-A
Matrix: Water
Analysis Batch: 495811

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 495492

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:11	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:11	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 14:11	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 14:11	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 14:11	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:11	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 14:11	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 14:11	1

Lab Sample ID: LCS 480-495492/2-A
Matrix: Water
Analysis Batch: 495811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 495492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.63		ug/L		98	80 - 120
Arsenic	20.0	17.48		ug/L		87	80 - 120
Beryllium	20.0	19.83		ug/L		99	80 - 120
Cadmium	20.0	19.21		ug/L		96	80 - 120
Cobalt	20.0	19.16		ug/L		96	80 - 120
Molybdenum	20.0	19.13		ug/L		96	80 - 120
Selenium	20.0	18.93		ug/L		95	80 - 120
Thallium	20.0	19.89		ug/L		99	80 - 120

Lab Sample ID: 480-160015-2 MS
Matrix: Water
Analysis Batch: 495811

Client Sample ID: D-1S
Prep Type: Total/NA
Prep Batch: 495492

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		20.0	20.92		ug/L		105	75 - 125
Arsenic	ND		20.0	20.19		ug/L		101	75 - 125
Beryllium	ND		20.0	20.22		ug/L		101	75 - 125
Cadmium	ND		20.0	18.99		ug/L		95	75 - 125
Cobalt	ND		20.0	18.92		ug/L		94	75 - 125
Molybdenum	ND		20.0	20.99		ug/L		105	75 - 125
Selenium	ND		20.0	19.91		ug/L		100	75 - 125
Thallium	ND		20.0	20.12		ug/L		101	75 - 125

Lab Sample ID: 480-160015-2 MSD
Matrix: Water
Analysis Batch: 495811

Client Sample ID: D-1S
Prep Type: Total/NA
Prep Batch: 495492

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		20.0	22.84		ug/L		114	75 - 125	9	20
Arsenic	ND		20.0	22.53		ug/L		113	75 - 125	11	20
Beryllium	ND		20.0	22.61		ug/L		113	75 - 125	11	20
Cadmium	ND		20.0	21.05		ug/L		105	75 - 125	10	20
Cobalt	ND		20.0	21.19		ug/L		106	75 - 125	11	20
Molybdenum	ND		20.0	22.90		ug/L		115	75 - 125	9	20
Selenium	ND		20.0	22.21		ug/L		111	75 - 125	11	20

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

Lab Sample ID: 480-160015-2 MSD
Matrix: Water
Analysis Batch: 495811

Client Sample ID: D-1S
Prep Type: Total/NA
Prep Batch: 495492

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Thallium	ND		20.0	22.43		ug/L		112	75 - 125	11	20

Lab Sample ID: MB 480-495493/1-A
Matrix: Water
Analysis Batch: 495899

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 495493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:25	1
Arsenic	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:25	1
Beryllium	ND		0.70		ug/L		10/03/19 08:25	10/03/19 15:25	1
Cadmium	ND		0.50		ug/L		10/03/19 08:25	10/03/19 15:25	1
Cobalt	ND		0.30		ug/L		10/03/19 08:25	10/03/19 15:25	1
Molybdenum	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:25	1
Selenium	ND		1.0		ug/L		10/03/19 08:25	10/03/19 15:25	1
Thallium	ND		0.20		ug/L		10/03/19 08:25	10/03/19 15:25	1

Lab Sample ID: LCS 480-495493/2-A
Matrix: Water
Analysis Batch: 495899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 495493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.80		ug/L		99	80 - 120
Arsenic	20.0	17.76		ug/L		89	80 - 120
Beryllium	20.0	19.89		ug/L		99	80 - 120
Cadmium	20.0	19.15		ug/L		96	80 - 120
Cobalt	20.0	19.40		ug/L		97	80 - 120
Molybdenum	20.0	18.99		ug/L		95	80 - 120
Selenium	20.0	18.87		ug/L		94	80 - 120
Thallium	20.0	20.72		ug/L		104	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-496317/1-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 496317

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 14:43	1

Lab Sample ID: LCS 480-496317/2-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 496317

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	6.67	6.83		ug/L		102	80 - 120

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

Lab Sample ID: LCSD 480-496317/3-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 496317

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			6.67	6.88		ug/L		103	80 - 120	1	20

Lab Sample ID: MB 480-496319/1-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 496319

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 15:22	1

Lab Sample ID: LCS 480-496319/2-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 496319

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			6.67	6.98		ug/L		105	80 - 120		

Lab Sample ID: 480-160015-4 MS
Matrix: Water
Analysis Batch: 496479

Client Sample ID: D-2S
Prep Type: Total/NA
Prep Batch: 496319

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		6.67	7.07		ug/L		106	80 - 120		

Lab Sample ID: 480-160015-4 MSD
Matrix: Water
Analysis Batch: 496479

Client Sample ID: D-2S
Prep Type: Total/NA
Prep Batch: 496319

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		6.67	7.13		ug/L		107	80 - 120	1	20

Lab Sample ID: MB 480-496320/1-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 496320

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		10/07/19 12:04	10/07/19 16:02	1

Lab Sample ID: LCS 480-496320/2-A
Matrix: Water
Analysis Batch: 496479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 496320

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			6.67	7.08		ug/L		106	80 - 120		

Lab Sample ID: 480-160015-19 MS
Matrix: Water
Analysis Batch: 496479

Client Sample ID: DUP-2
Prep Type: Total/NA
Prep Batch: 496320

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		6.67	6.90		ug/L		103	80 - 120		

Method: 7470A - Mercury (CVAA)

Lab Sample ID: 480-160015-19 MSD
Matrix: Water
Analysis Batch: 496479

Client Sample ID: DUP-2
Prep Type: Total/NA
Prep Batch: 496320

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		6.67	6.77		ug/L		101	80 - 120	2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-496635/28
Matrix: Water
Analysis Batch: 496635

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			10/08/19 21:22	1
Fluoride	ND		0.050		mg/L			10/08/19 21:22	1
Sulfate	ND		2.0		mg/L			10/08/19 21:22	1

Lab Sample ID: MB 480-496635/4
Matrix: Water
Analysis Batch: 496635

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			10/08/19 15:32	1
Fluoride	ND		0.050		mg/L			10/08/19 15:32	1
Sulfate	ND		2.0		mg/L			10/08/19 15:32	1

Lab Sample ID: LCS 480-496635/27
Matrix: Water
Analysis Batch: 496635

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	47.26		mg/L		95	90 - 110
Fluoride	5.00	4.81		mg/L		96	90 - 110
Sulfate	50.0	47.09		mg/L		94	90 - 110

Lab Sample ID: LCS 480-496635/3
Matrix: Water
Analysis Batch: 496635

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	46.85		mg/L		94	90 - 110
Fluoride	5.00	4.79		mg/L		96	90 - 110
Sulfate	50.0	46.72		mg/L		93	90 - 110

Lab Sample ID: 480-160015-4 MS
Matrix: Water
Analysis Batch: 496635

Client Sample ID: D-2S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	41.7		100	139.6		mg/L		98	81 - 120
Fluoride	ND		10.0	9.75		mg/L		98	82 - 120
Sulfate	19.5		100	114.8		mg/L		95	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-160015-10 MS
Matrix: Water
Analysis Batch: 496635

Client Sample ID: D-5S2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	125		250	360.9		mg/L		94	81 - 120
Fluoride	ND		25.0	24.69		mg/L		99	82 - 120
Sulfate	57.3		250	297.6		mg/L		96	80 - 120

Lab Sample ID: 480-160015-10 MSD
Matrix: Water
Analysis Batch: 496635

Client Sample ID: D-5S2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	125		250	360.7		mg/L		94	81 - 120	0	15
Fluoride	ND		25.0	24.68		mg/L		99	82 - 120	0	15
Sulfate	57.3		250	297.2		mg/L		96	80 - 120	0	15

Lab Sample ID: 480-160015-20 MS
Matrix: Water
Analysis Batch: 496635

Client Sample ID: EQUIPMENT BLANK
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	ND		50.0	49.13		mg/L		98	81 - 120
Fluoride	0.078		5.00	5.11		mg/L		101	82 - 120
Sulfate	ND		50.0	49.50		mg/L		99	80 - 120

Lab Sample ID: MB 480-496754/4
Matrix: Water
Analysis Batch: 496754

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			10/09/19 12:08	1
Fluoride	ND		0.050		mg/L			10/09/19 12:08	1
Sulfate	ND		2.0		mg/L			10/09/19 12:08	1

Lab Sample ID: LCS 480-496754/3
Matrix: Water
Analysis Batch: 496754

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	47.66		mg/L		95	90 - 110
Fluoride	5.00	4.72		mg/L		94	90 - 110
Sulfate	50.0	45.85		mg/L		92	90 - 110

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

Lab Sample ID: MB 480-495421/1
Matrix: Water
Analysis Batch: 495421

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	ND		10.0		mg/L			10/02/19 10:34	1

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

Lab Sample ID: LCS 480-495421/2
Matrix: Water
Analysis Batch: 495421

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			500	538.0		mg/L		108	85 - 115		

Lab Sample ID: 480-160015-21 DU
Matrix: Water
Analysis Batch: 495421

Client Sample ID: FIELD BLANK
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	ND			ND		mg/L				NC	10

Lab Sample ID: MB 480-495439/1
Matrix: Water
Analysis Batch: 495439

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	ND		10.0		mg/L			10/02/19 11:52	1

Lab Sample ID: LCS 480-495439/2
Matrix: Water
Analysis Batch: 495439

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			500	473.0		mg/L		95	85 - 115		

Lab Sample ID: 480-160015-19 DU
Matrix: Water
Analysis Batch: 495439

Client Sample ID: DUP-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	466			468.0		mg/L				0.4	10

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-497211/1
Matrix: Water
Analysis Batch: 497211

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	99 - 101		

Lab Sample ID: LCS 480-497211/23
Matrix: Water
Analysis Batch: 497211

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	99 - 101		

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: LCS 480-497211/45
Matrix: Water
Analysis Batch: 497211

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	99 - 101		

Lab Sample ID: 480-160015-16 DU
Matrix: Water
Analysis Batch: 497211

Client Sample ID: U-5D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.5	HF		7.5		SU				0.1	5
Temperature	18.5	HF		18.1		Degrees C				2	10

Lab Sample ID: LCS 480-497288/23
Matrix: Water
Analysis Batch: 497288

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	99 - 101		

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-445251/16-A
Matrix: Water
Analysis Batch: 448149

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445251

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1431		0.0975	0.0983	1.00	0.138	pCi/L	10/07/19 08:01	10/29/19 11:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.6*		*40 - 110*	*10/07/19 08:01*	*10/29/19 11:36*	*1*

Lab Sample ID: LCS 160-445251/1-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445251

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.71		1.13	1.00	0.131	pCi/L	94	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.0*		*40 - 110*

Lab Sample ID: MB 160-445304/23-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445304

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1001	U	0.120	0.120	1.00	0.197	pCi/L	10/07/19 12:52	10/29/19 09:28	1

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: MB 160-445304/23-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445304

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	10/07/19 12:52	10/29/19 09:28	1

Lab Sample ID: LCS 160-445304/1-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445304

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			15.1	13.42		1.45	1.00	0.200	pCi/L	89	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	88.4		40 - 110

Lab Sample ID: LCSD 160-445304/2-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445304

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			15.1	13.03		1.42	1.00	0.226	pCi/L	86	75 - 125	0.14	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	88.7		40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-445256/16-A
Matrix: Water
Analysis Batch: 447083

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445256

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.06217	U	0.353	0.353	1.00	0.646	pCi/L	10/07/19 08:31	10/21/19 20:00	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	81.6		40 - 110	10/07/19 08:31	10/21/19 20:00	1
Y Carrier	80.0		40 - 110	10/07/19 08:31	10/21/19 20:00	1

Lab Sample ID: LCS 160-445256/1-A
Matrix: Water
Analysis Batch: 447083

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445256

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.47	10.89		1.26	1.00	0.441	pCi/L	115	75 - 125		

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-445256/1-A
Matrix: Water
Analysis Batch: 447083

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445256

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	89.0		40 - 110
Y Carrier	77.4		40 - 110

Lab Sample ID: MB 160-445315/23-A
Matrix: Water
Analysis Batch: 447458

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445315

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5242	U	0.353	0.356	1.00	0.548	pCi/L	10/07/19 13:42	10/23/19 17:04	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	10/07/19 13:42	10/23/19 17:04	1
Y Carrier	83.4		40 - 110	10/07/19 13:42	10/23/19 17:04	1

Lab Sample ID: LCS 160-445315/1-A
Matrix: Water
Analysis Batch: 447324

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445315

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			12.6	12.63		1.52	1.00	0.645	pCi/L	100	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	88.4		40 - 110
Y Carrier	80.7		40 - 110

Lab Sample ID: LCSD 160-445315/2-A
Matrix: Water
Analysis Batch: 447324

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445315

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			12.6	13.78		1.64	1.00	0.653	pCi/L	109	75 - 125	0.36	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	88.7		40 - 110
Y Carrier	77.8		40 - 110

Metals

Prep Batch: 495465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	3005A	
480-160015-2	D-1S	Total/NA	Water	3005A	
480-160015-3	D-2D	Total/NA	Water	3005A	
480-160015-4	D-2S	Total/NA	Water	3005A	
480-160015-5	D-3D	Total/NA	Water	3005A	
480-160015-6	D-3S	Total/NA	Water	3005A	
480-160015-7	D-4D	Total/NA	Water	3005A	
480-160015-8	D-4S	Total/NA	Water	3005A	
480-160015-9	D-5D	Total/NA	Water	3005A	
480-160015-10	D-5S2	Total/NA	Water	3005A	
480-160015-11	D-7	Total/NA	Water	3005A	
480-160015-12	D-8	Total/NA	Water	3005A	
480-160015-13	D-9	Total/NA	Water	3005A	
480-160015-14	U-4D	Total/NA	Water	3005A	
480-160015-15	U-4S	Total/NA	Water	3005A	
480-160015-16	U-5D	Total/NA	Water	3005A	
480-160015-17	U-5S	Total/NA	Water	3005A	
480-160015-18	DUP-1	Total/NA	Water	3005A	
480-160015-19	DUP-2	Total/NA	Water	3005A	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	3005A	
MB 480-495465/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-495465/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-160015-1 MS	D-1D	Total/NA	Water	3005A	
480-160015-1 MSD	D-1D	Total/NA	Water	3005A	

Prep Batch: 495466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	3005A	
MB 480-495466/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-495466/2-A	Lab Control Sample	Total/NA	Water	3005A	
LCSD 480-495466/25-A	Lab Control Sample Dup	Total/NA	Water	3005A	
480-160015-21 MS	FIELD BLANK	Total/NA	Water	3005A	
480-160015-21 MSD	FIELD BLANK	Total/NA	Water	3005A	

Prep Batch: 495492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	3020A	
480-160015-2	D-1S	Total/NA	Water	3020A	
480-160015-3	D-2D	Total/NA	Water	3020A	
480-160015-4	D-2S	Total/NA	Water	3020A	
480-160015-5	D-3D	Total/NA	Water	3020A	
480-160015-6	D-3S	Total/NA	Water	3020A	
480-160015-7	D-4D	Total/NA	Water	3020A	
480-160015-8	D-4S	Total/NA	Water	3020A	
480-160015-9	D-5D	Total/NA	Water	3020A	
480-160015-10	D-5S2	Total/NA	Water	3020A	
480-160015-11	D-7	Total/NA	Water	3020A	
480-160015-12	D-8	Total/NA	Water	3020A	
480-160015-13	D-9	Total/NA	Water	3020A	
480-160015-14	U-4D	Total/NA	Water	3020A	
480-160015-15	U-4S	Total/NA	Water	3020A	

Metals (Continued)

Prep Batch: 495492 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-16	U-5D	Total/NA	Water	3020A	
480-160015-17	U-5S	Total/NA	Water	3020A	
480-160015-18	DUP-1	Total/NA	Water	3020A	
480-160015-19	DUP-2	Total/NA	Water	3020A	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	3020A	
MB 480-495492/1-A	Method Blank	Total/NA	Water	3020A	
LCS 480-495492/2-A	Lab Control Sample	Total/NA	Water	3020A	
480-160015-2 MS	D-1S	Total/NA	Water	3020A	
480-160015-2 MSD	D-1S	Total/NA	Water	3020A	

Prep Batch: 495493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	3020A	
MB 480-495493/1-A	Method Blank	Total/NA	Water	3020A	
LCS 480-495493/2-A	Lab Control Sample	Total/NA	Water	3020A	

Analysis Batch: 495811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	6020B	495492
480-160015-2	D-1S	Total/NA	Water	6020B	495492
480-160015-3	D-2D	Total/NA	Water	6020B	495492
480-160015-4	D-2S	Total/NA	Water	6020B	495492
480-160015-5	D-3D	Total/NA	Water	6020B	495492
480-160015-6	D-3S	Total/NA	Water	6020B	495492
480-160015-7	D-4D	Total/NA	Water	6020B	495492
480-160015-8	D-4S	Total/NA	Water	6020B	495492
480-160015-9	D-5D	Total/NA	Water	6020B	495492
480-160015-10	D-5S2	Total/NA	Water	6020B	495492
480-160015-11	D-7	Total/NA	Water	6020B	495492
480-160015-12	D-8	Total/NA	Water	6020B	495492
480-160015-13	D-9	Total/NA	Water	6020B	495492
480-160015-14	U-4D	Total/NA	Water	6020B	495492
480-160015-15	U-4S	Total/NA	Water	6020B	495492
480-160015-16	U-5D	Total/NA	Water	6020B	495492
480-160015-17	U-5S	Total/NA	Water	6020B	495492
480-160015-18	DUP-1	Total/NA	Water	6020B	495492
480-160015-19	DUP-2	Total/NA	Water	6020B	495492
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	6020B	495492
MB 480-495492/1-A	Method Blank	Total/NA	Water	6020B	495492
LCS 480-495492/2-A	Lab Control Sample	Total/NA	Water	6020B	495492
480-160015-2 MS	D-1S	Total/NA	Water	6020B	495492
480-160015-2 MSD	D-1S	Total/NA	Water	6020B	495492

Analysis Batch: 495872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	6010D	495466
MB 480-495466/1-A	Method Blank	Total/NA	Water	6010D	495466
LCS 480-495466/2-A	Lab Control Sample	Total/NA	Water	6010D	495466
LCSD 480-495466/25-A	Lab Control Sample Dup	Total/NA	Water	6010D	495466
480-160015-21 MS	FIELD BLANK	Total/NA	Water	6010D	495466
480-160015-21 MSD	FIELD BLANK	Total/NA	Water	6010D	495466

Metals

Analysis Batch: 495874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	6010D	495465
480-160015-2	D-1S	Total/NA	Water	6010D	495465
480-160015-3	D-2D	Total/NA	Water	6010D	495465
480-160015-4	D-2S	Total/NA	Water	6010D	495465
480-160015-5	D-3D	Total/NA	Water	6010D	495465
480-160015-6	D-3S	Total/NA	Water	6010D	495465
480-160015-7	D-4D	Total/NA	Water	6010D	495465
480-160015-8	D-4S	Total/NA	Water	6010D	495465
480-160015-9	D-5D	Total/NA	Water	6010D	495465
480-160015-10	D-5S2	Total/NA	Water	6010D	495465
480-160015-11	D-7	Total/NA	Water	6010D	495465
480-160015-12	D-8	Total/NA	Water	6010D	495465
480-160015-13	D-9	Total/NA	Water	6010D	495465
480-160015-14	U-4D	Total/NA	Water	6010D	495465
480-160015-15	U-4S	Total/NA	Water	6010D	495465
480-160015-16	U-5D	Total/NA	Water	6010D	495465
480-160015-17	U-5S	Total/NA	Water	6010D	495465
480-160015-18	DUP-1	Total/NA	Water	6010D	495465
480-160015-19	DUP-2	Total/NA	Water	6010D	495465
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	6010D	495465
MB 480-495465/1-A	Method Blank	Total/NA	Water	6010D	495465
LCS 480-495465/2-A	Lab Control Sample	Total/NA	Water	6010D	495465
480-160015-1 MS	D-1D	Total/NA	Water	6010D	495465
480-160015-1 MSD	D-1D	Total/NA	Water	6010D	495465

Analysis Batch: 495899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	6020B	495493
MB 480-495493/1-A	Method Blank	Total/NA	Water	6020B	495493
LCS 480-495493/2-A	Lab Control Sample	Total/NA	Water	6020B	495493

Prep Batch: 496317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	7470A	
480-160015-2	D-1S	Total/NA	Water	7470A	
MB 480-496317/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-496317/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 480-496317/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Prep Batch: 496319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-3	D-2D	Total/NA	Water	7470A	
480-160015-4	D-2S	Total/NA	Water	7470A	
480-160015-5	D-3D	Total/NA	Water	7470A	
480-160015-6	D-3S	Total/NA	Water	7470A	
480-160015-7	D-4D	Total/NA	Water	7470A	
480-160015-8	D-4S	Total/NA	Water	7470A	
480-160015-9	D-5D	Total/NA	Water	7470A	
480-160015-10	D-5S2	Total/NA	Water	7470A	
480-160015-11	D-7	Total/NA	Water	7470A	
480-160015-12	D-8	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 496319 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-13	D-9	Total/NA	Water	7470A	
480-160015-14	U-4D	Total/NA	Water	7470A	
480-160015-15	U-4S	Total/NA	Water	7470A	
480-160015-16	U-5D	Total/NA	Water	7470A	
480-160015-17	U-5S	Total/NA	Water	7470A	
MB 480-496319/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-496319/2-A	Lab Control Sample	Total/NA	Water	7470A	
480-160015-4 MS	D-2S	Total/NA	Water	7470A	
480-160015-4 MSD	D-2S	Total/NA	Water	7470A	

Prep Batch: 496320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-18	DUP-1	Total/NA	Water	7470A	
480-160015-19	DUP-2	Total/NA	Water	7470A	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	7470A	
480-160015-21	FIELD BLANK	Total/NA	Water	7470A	
MB 480-496320/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-496320/2-A	Lab Control Sample	Total/NA	Water	7470A	
480-160015-19 MS	DUP-2	Total/NA	Water	7470A	
480-160015-19 MSD	DUP-2	Total/NA	Water	7470A	

Analysis Batch: 496479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	7470A	496317
480-160015-2	D-1S	Total/NA	Water	7470A	496317
480-160015-3	D-2D	Total/NA	Water	7470A	496319
480-160015-4	D-2S	Total/NA	Water	7470A	496319
480-160015-5	D-3D	Total/NA	Water	7470A	496319
480-160015-6	D-3S	Total/NA	Water	7470A	496319
480-160015-7	D-4D	Total/NA	Water	7470A	496319
480-160015-8	D-4S	Total/NA	Water	7470A	496319
480-160015-9	D-5D	Total/NA	Water	7470A	496319
480-160015-10	D-5S2	Total/NA	Water	7470A	496319
480-160015-11	D-7	Total/NA	Water	7470A	496319
480-160015-12	D-8	Total/NA	Water	7470A	496319
480-160015-13	D-9	Total/NA	Water	7470A	496319
480-160015-14	U-4D	Total/NA	Water	7470A	496319
480-160015-15	U-4S	Total/NA	Water	7470A	496319
480-160015-16	U-5D	Total/NA	Water	7470A	496319
480-160015-17	U-5S	Total/NA	Water	7470A	496319
480-160015-18	DUP-1	Total/NA	Water	7470A	496320
480-160015-19	DUP-2	Total/NA	Water	7470A	496320
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	7470A	496320
480-160015-21	FIELD BLANK	Total/NA	Water	7470A	496320
MB 480-496317/1-A	Method Blank	Total/NA	Water	7470A	496317
MB 480-496319/1-A	Method Blank	Total/NA	Water	7470A	496319
MB 480-496320/1-A	Method Blank	Total/NA	Water	7470A	496320
LCS 480-496317/2-A	Lab Control Sample	Total/NA	Water	7470A	496317
LCS 480-496319/2-A	Lab Control Sample	Total/NA	Water	7470A	496319
LCS 480-496320/2-A	Lab Control Sample	Total/NA	Water	7470A	496320
LCSD 480-496317/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	496317

Metals (Continued)

Analysis Batch: 496479 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-4 MS	D-2S	Total/NA	Water	7470A	496319
480-160015-4 MSD	D-2S	Total/NA	Water	7470A	496319
480-160015-19 MS	DUP-2	Total/NA	Water	7470A	496320
480-160015-19 MSD	DUP-2	Total/NA	Water	7470A	496320

General Chemistry

Analysis Batch: 495421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	SM 2540C	
480-160015-2	D-1S	Total/NA	Water	SM 2540C	
480-160015-3	D-2D	Total/NA	Water	SM 2540C	
480-160015-4	D-2S	Total/NA	Water	SM 2540C	
480-160015-7	D-4D	Total/NA	Water	SM 2540C	
480-160015-8	D-4S	Total/NA	Water	SM 2540C	
480-160015-11	D-7	Total/NA	Water	SM 2540C	
480-160015-12	D-8	Total/NA	Water	SM 2540C	
480-160015-13	D-9	Total/NA	Water	SM 2540C	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
480-160015-21	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 480-495421/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-495421/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-160015-21 DU	FIELD BLANK	Total/NA	Water	SM 2540C	

Analysis Batch: 495439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-5	D-3D	Total/NA	Water	SM 2540C	
480-160015-6	D-3S	Total/NA	Water	SM 2540C	
480-160015-9	D-5D	Total/NA	Water	SM 2540C	
480-160015-10	D-5S2	Total/NA	Water	SM 2540C	
480-160015-14	U-4D	Total/NA	Water	SM 2540C	
480-160015-15	U-4S	Total/NA	Water	SM 2540C	
480-160015-16	U-5D	Total/NA	Water	SM 2540C	
480-160015-17	U-5S	Total/NA	Water	SM 2540C	
480-160015-18	DUP-1	Total/NA	Water	SM 2540C	
480-160015-19	DUP-2	Total/NA	Water	SM 2540C	
MB 480-495439/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-495439/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-160015-19 DU	DUP-2	Total/NA	Water	SM 2540C	

Analysis Batch: 496635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	300.0	
480-160015-2	D-1S	Total/NA	Water	300.0	
480-160015-3	D-2D	Total/NA	Water	300.0	
480-160015-4	D-2S	Total/NA	Water	300.0	
480-160015-5	D-3D	Total/NA	Water	300.0	
480-160015-6	D-3S	Total/NA	Water	300.0	
480-160015-7	D-4D	Total/NA	Water	300.0	
480-160015-8	D-4S	Total/NA	Water	300.0	
480-160015-9	D-5D	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 496635 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-10	D-5S2	Total/NA	Water	300.0	
480-160015-11	D-7	Total/NA	Water	300.0	
480-160015-13	D-9	Total/NA	Water	300.0	
480-160015-14	U-4D	Total/NA	Water	300.0	
480-160015-15	U-4S	Total/NA	Water	300.0	
480-160015-16	U-5D	Total/NA	Water	300.0	
480-160015-17	U-5S	Total/NA	Water	300.0	
480-160015-18	DUP-1	Total/NA	Water	300.0	
480-160015-19	DUP-2	Total/NA	Water	300.0	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-496635/28	Method Blank	Total/NA	Water	300.0	
MB 480-496635/4	Method Blank	Total/NA	Water	300.0	
LCS 480-496635/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-496635/3	Lab Control Sample	Total/NA	Water	300.0	
480-160015-4 MS	D-2S	Total/NA	Water	300.0	
480-160015-10 MS	D-5S2	Total/NA	Water	300.0	
480-160015-10 MSD	D-5S2	Total/NA	Water	300.0	
480-160015-20 MS	EQUIPMENT BLANK	Total/NA	Water	300.0	

Analysis Batch: 496754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-12	D-8	Total/NA	Water	300.0	
480-160015-21	FIELD BLANK	Total/NA	Water	300.0	
MB 480-496754/4	Method Blank	Total/NA	Water	300.0	
LCS 480-496754/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 497211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	SM 4500 H+ B	
480-160015-2	D-1S	Total/NA	Water	SM 4500 H+ B	
480-160015-3	D-2D	Total/NA	Water	SM 4500 H+ B	
480-160015-4	D-2S	Total/NA	Water	SM 4500 H+ B	
480-160015-5	D-3D	Total/NA	Water	SM 4500 H+ B	
480-160015-6	D-3S	Total/NA	Water	SM 4500 H+ B	
480-160015-7	D-4D	Total/NA	Water	SM 4500 H+ B	
480-160015-8	D-4S	Total/NA	Water	SM 4500 H+ B	
480-160015-9	D-5D	Total/NA	Water	SM 4500 H+ B	
480-160015-10	D-5S2	Total/NA	Water	SM 4500 H+ B	
480-160015-11	D-7	Total/NA	Water	SM 4500 H+ B	
480-160015-12	D-8	Total/NA	Water	SM 4500 H+ B	
480-160015-13	D-9	Total/NA	Water	SM 4500 H+ B	
480-160015-14	U-4D	Total/NA	Water	SM 4500 H+ B	
480-160015-15	U-4S	Total/NA	Water	SM 4500 H+ B	
480-160015-16	U-5D	Total/NA	Water	SM 4500 H+ B	
480-160015-17	U-5S	Total/NA	Water	SM 4500 H+ B	
480-160015-18	DUP-1	Total/NA	Water	SM 4500 H+ B	
480-160015-19	DUP-2	Total/NA	Water	SM 4500 H+ B	
LCS 480-497211/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-497211/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-497211/45	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-160015-16 DU	U-5D	Total/NA	Water	SM 4500 H+ B	

General Chemistry

Analysis Batch: 497288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
480-160015-21	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-497288/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Rad

Prep Batch: 445251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	PrecSep-21	
MB 160-445251/16-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-445251/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 445256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-21	FIELD BLANK	Total/NA	Water	PrecSep_0	
MB 160-445256/16-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-445256/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Prep Batch: 445304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	PrecSep-21	
480-160015-2	D-1S	Total/NA	Water	PrecSep-21	
480-160015-3	D-2D	Total/NA	Water	PrecSep-21	
480-160015-4	D-2S	Total/NA	Water	PrecSep-21	
480-160015-5	D-3D	Total/NA	Water	PrecSep-21	
480-160015-6	D-3S	Total/NA	Water	PrecSep-21	
480-160015-7	D-4D	Total/NA	Water	PrecSep-21	
480-160015-8	D-4S	Total/NA	Water	PrecSep-21	
480-160015-9	D-5D	Total/NA	Water	PrecSep-21	
480-160015-10	D-5S2	Total/NA	Water	PrecSep-21	
480-160015-11	D-7	Total/NA	Water	PrecSep-21	
480-160015-12	D-8	Total/NA	Water	PrecSep-21	
480-160015-13	D-9	Total/NA	Water	PrecSep-21	
480-160015-14	U-4D	Total/NA	Water	PrecSep-21	
480-160015-15	U-4S	Total/NA	Water	PrecSep-21	
480-160015-16	U-5D	Total/NA	Water	PrecSep-21	
480-160015-17	U-5S	Total/NA	Water	PrecSep-21	
480-160015-18	DUP-1	Total/NA	Water	PrecSep-21	
480-160015-19	DUP-2	Total/NA	Water	PrecSep-21	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	PrecSep-21	
MB 160-445304/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-445304/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-445304/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 445315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-1	D-1D	Total/NA	Water	PrecSep_0	
480-160015-2	D-1S	Total/NA	Water	PrecSep_0	
480-160015-3	D-2D	Total/NA	Water	PrecSep_0	
480-160015-4	D-2S	Total/NA	Water	PrecSep_0	
480-160015-5	D-3D	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 445315 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-160015-6	D-3S	Total/NA	Water	PrecSep_0	
480-160015-7	D-4D	Total/NA	Water	PrecSep_0	
480-160015-8	D-4S	Total/NA	Water	PrecSep_0	
480-160015-9	D-5D	Total/NA	Water	PrecSep_0	
480-160015-10	D-5S2	Total/NA	Water	PrecSep_0	
480-160015-11	D-7	Total/NA	Water	PrecSep_0	
480-160015-12	D-8	Total/NA	Water	PrecSep_0	
480-160015-13	D-9	Total/NA	Water	PrecSep_0	
480-160015-14	U-4D	Total/NA	Water	PrecSep_0	
480-160015-15	U-4S	Total/NA	Water	PrecSep_0	
480-160015-16	U-5D	Total/NA	Water	PrecSep_0	
480-160015-17	U-5S	Total/NA	Water	PrecSep_0	
480-160015-18	DUP-1	Total/NA	Water	PrecSep_0	
480-160015-19	DUP-2	Total/NA	Water	PrecSep_0	
480-160015-20	EQUIPMENT BLANK	Total/NA	Water	PrecSep_0	
MB 160-445315/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-445315/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-445315/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-160015-1

Client Sample ID: D-1D

Lab Sample ID: 480-160015-1

Date Collected: 09/26/19 09:30
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/03/19 23:41	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:16	KMP	TAL BUF
Total/NA	Prep	7470A			496317	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:19	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 19:25	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 11:55	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:07	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:00	SCB	TAL SL

Client Sample ID: D-1S

Lab Sample ID: 480-160015-2

Date Collected: 09/26/19 09:10
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:00	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:18	KMP	TAL BUF
Total/NA	Prep	7470A			496317	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:20	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 19:40	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 11:58	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:07	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:00	SCB	TAL SL

Client Sample ID: D-2D

Lab Sample ID: 480-160015-3

Date Collected: 09/26/19 10:10
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:03	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:29	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:33	BMB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-2D
Lab Sample ID: 480-160015-3
Date Collected: 09/26/19 10:10
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	496635	10/08/19 19:55	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:01	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:08	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:00	SCB	TAL SL

Client Sample ID: D-2S
Lab Sample ID: 480-160015-4
Date Collected: 09/26/19 10:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:18	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:32	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:35	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 20:09	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:04	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:08	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:00	SCB	TAL SL

Client Sample ID: D-3D
Lab Sample ID: 480-160015-5
Date Collected: 09/25/19 14:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:22	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:41	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:40	BMB	TAL BUF
Total/NA	Analysis	300.0		5	496635	10/08/19 21:37	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:07	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:08	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-3D
Lab Sample ID: 480-160015-5
Date Collected: 09/25/19 14:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-3S
Lab Sample ID: 480-160015-6
Date Collected: 09/25/19 13:40
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:26	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:43	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:41	BMB	TAL BUF
Total/NA	Analysis	300.0		5	496635	10/08/19 21:51	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:12	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:08	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-4D
Lab Sample ID: 480-160015-7
Date Collected: 09/26/19 10:50
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:29	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:46	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:45	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 22:06	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:15	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:08	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-4S
Lab Sample ID: 480-160015-8
Date Collected: 09/26/19 10:40
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:33	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:48	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:46	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 22:20	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:18	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:09	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-5D
Lab Sample ID: 480-160015-9
Date Collected: 09/25/19 13:15
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:37	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:50	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:48	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/08/19 22:35	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:21	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:09	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-5S2
Lab Sample ID: 480-160015-10
Date Collected: 09/25/19 13:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:40	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:53	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:49	BMB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-5S2
Lab Sample ID: 480-160015-10
Date Collected: 09/25/19 13:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		5	496635	10/08/19 22:50	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:24	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:09	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-7
Lab Sample ID: 480-160015-11
Date Collected: 09/26/19 08:30
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:44	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:55	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:50	BMB	TAL BUF
Total/NA	Analysis	300.0		5	496635	10/09/19 00:03	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:27	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:09	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447324	10/23/19 17:01	SCB	TAL SL

Client Sample ID: D-8
Lab Sample ID: 480-160015-12
Date Collected: 09/26/19 11:10
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 00:48	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:57	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:52	BMB	TAL BUF
Total/NA	Analysis	300.0		1	496754	10/09/19 12:23	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:29	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:09	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: D-8
Lab Sample ID: 480-160015-12
Date Collected: 09/26/19 11:10
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:03	SCB	TAL SL

Client Sample ID: D-9
Lab Sample ID: 480-160015-13
Date Collected: 09/26/19 11:40
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:03	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 14:59	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:54	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/09/19 00:17	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:32	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:10	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:03	SCB	TAL SL

Client Sample ID: U-4D
Lab Sample ID: 480-160015-14
Date Collected: 09/25/19 11:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:06	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:02	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:53	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/09/19 00:32	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:35	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 07:10	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:03	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: U-4S
Lab Sample ID: 480-160015-15
Date Collected: 09/25/19 10:15
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:10	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:11	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:56	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/09/19 00:46	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:38	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448149	10/29/19 07:11	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: U-5D
Lab Sample ID: 480-160015-16
Date Collected: 09/25/19 12:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:14	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:13	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 15:57	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/09/19 01:01	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:44	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448149	10/29/19 07:12	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: U-5S
Lab Sample ID: 480-160015-17
Date Collected: 09/25/19 11:45
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:18	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:16	KMP	TAL BUF
Total/NA	Prep	7470A			496319	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 16:01	BMB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: U-5S
Lab Sample ID: 480-160015-17
Date Collected: 09/25/19 11:45
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	496635	10/09/19 01:16	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:50	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 09:27	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: DUP-1
Lab Sample ID: 480-160015-18
Date Collected: 09/25/19 00:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:21	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:18	KMP	TAL BUF
Total/NA	Prep	7470A			496320	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 16:05	BMB	TAL BUF
Total/NA	Analysis	300.0		2	496635	10/09/19 01:30	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:52	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 09:28	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: DUP-2
Lab Sample ID: 480-160015-19
Date Collected: 09/25/19 00:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:25	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:20	KMP	TAL BUF
Total/NA	Prep	7470A			496320	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 16:06	BMB	TAL BUF
Total/NA	Analysis	300.0		5	496635	10/09/19 01:45	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495439	10/02/19 11:52	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497211	10/10/19 12:55	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 09:28	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Client Sample ID: DUP-2
Lab Sample ID: 480-160015-19
Date Collected: 09/25/19 00:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: EQUIPMENT BLANK
Lab Sample ID: 480-160015-20
Date Collected: 09/26/19 12:00
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495465	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495874	10/04/19 01:29	AMH	TAL BUF
Total/NA	Prep	3020A			495492	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495811	10/03/19 15:23	KMP	TAL BUF
Total/NA	Prep	7470A			496320	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 16:11	BMB	TAL BUF
Total/NA	Analysis	300.0		1	496635	10/09/19 01:59	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497288	10/10/19 15:55	AEF	TAL BUF
Total/NA	Prep	PrecSep-21			445304	10/07/19 12:52	ORM	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 09:28	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445315	10/07/19 13:42	ORM	TAL SL
Total/NA	Analysis	904.0		1	447458	10/23/19 17:04	SCB	TAL SL

Client Sample ID: FIELD BLANK
Lab Sample ID: 480-160015-21
Date Collected: 09/26/19 11:50
Matrix: Water
Date Received: 09/28/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			495466	10/03/19 08:40	NSW	TAL BUF
Total/NA	Analysis	6010D		1	495872	10/03/19 19:16	LMH	TAL BUF
Total/NA	Prep	3020A			495493	10/03/19 08:25	EMB	TAL BUF
Total/NA	Analysis	6020B		1	495899	10/03/19 15:30	KMP	TAL BUF
Total/NA	Prep	7470A			496320	10/07/19 12:04	BMB	TAL BUF
Total/NA	Analysis	7470A		1	496479	10/07/19 16:13	BMB	TAL BUF
Total/NA	Analysis	300.0		1	496754	10/09/19 12:37	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	495421	10/02/19 10:34	CSS	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	497288	10/10/19 15:58	AEF	TAL BUF
Total/NA	Prep	PrecSep-21			445251	10/07/19 08:01	EJQ	TAL SL
Total/NA	Analysis	903.0		1	448150	10/29/19 09:30	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445256	10/07/19 08:31	EJQ	TAL SL
Total/NA	Analysis	904.0		1	447083	10/21/19 16:21	KLS	TAL SL

Laboratory References:
TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	036-999-337	12-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6010D	3005A	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

Laboratory: Eurofins TestAmerica, 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
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
Washington	State Program	C592	08-30-20
West Virginia DEP	State	381	10-31-19
West Virginia DEP	State Program	381	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Rosemount - CCR Groundwater

Job ID: 480-160015-1

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL BUF
6020B	Metals (ICP/MS)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3020A	Preparation, Total Metals	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Waste Connections, Inc.
Job ID: 480-160015-1
Project/Site: SKB Rosemount - CCR Groundwater

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-160015-1	D-1D	Water	09/26/19 09:30	09/28/19 10:00	
480-160015-2	D-1S	Water	09/26/19 09:10	09/28/19 10:00	
480-160015-3	D-2D	Water	09/26/19 10:10	09/28/19 10:00	
480-160015-4	D-2S	Water	09/26/19 10:00	09/28/19 10:00	
480-160015-5	D-3D	Water	09/25/19 14:00	09/28/19 10:00	
480-160015-6	D-3S	Water	09/25/19 13:40	09/28/19 10:00	
480-160015-7	D-4D	Water	09/26/19 10:50	09/28/19 10:00	
480-160015-8	D-4S	Water	09/26/19 10:40	09/28/19 10:00	
480-160015-9	D-5D	Water	09/25/19 13:15	09/28/19 10:00	
480-160015-10	D-5S2	Water	09/25/19 13:00	09/28/19 10:00	
480-160015-11	D-7	Water	09/26/19 08:30	09/28/19 10:00	
480-160015-12	D-8	Water	09/26/19 11:10	09/28/19 10:00	
480-160015-13	D-9	Water	09/26/19 11:40	09/28/19 10:00	
480-160015-14	U-4D	Water	09/25/19 11:00	09/28/19 10:00	
480-160015-15	U-4S	Water	09/25/19 10:15	09/28/19 10:00	
480-160015-16	U-5D	Water	09/25/19 12:00	09/28/19 10:00	
480-160015-17	U-5S	Water	09/25/19 11:45	09/28/19 10:00	
480-160015-18	DUP-1	Water	09/25/19 00:00	09/28/19 10:00	
480-160015-19	DUP-2	Water	09/25/19 00:00	09/28/19 10:00	
480-160015-20	EQUIPMENT BLANK	Water	09/26/19 12:00	09/28/19 10:00	
480-160015-21	FIELD BLANK	Water	09/26/19 11:50	09/28/19 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Dallas/Ft. Worth
#238

Chain of Custody Record

TestAmerica Minneapolis SC
213

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Client Information	Sampler: N-Schlagel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-135736-30557.1
Client Contact: Nathaniel Beinemann	Phone: 651-792-6085	E-Mail: ryan.vandette@testamericainc.com		Page: Page 1 of 2
Company: Waste Connections, Inc.		Analysis Requested		Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3
City: Rosemount	TAT Requested (days): Standard			
State, Zip: MN, 55068				
Phone:	PO #: Purchase Order Requested			
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Rosemount	Project #: 48013709			
Site: Minnesota	SSOW#:			

480-160015 Chain of Custody

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)	Ra226Ra228_GFPC - Radium 226/228	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	Total Number of	Special Instructions/Note:
			Preservation Code:				D	N	D		
D-1S	9/26/19	9:10	G	Water			X	X	X		
D-2S	9/26/19	10:00	G	Water			X	X	X		
D-3S	9/25/19	13:40	G	Water			X	X	X		
D-4S	9/26/19	10:40	G	Water			X	X	X		
D-5S2	9/25/19	13:00	G	Water			X	X	X		
D-7	9/26/19	8:30	G	Water			X	X	X		
D-8	9/26/19	11:10	G	Water			X	X	X		
D-9	9/26/19	11:40	G	Water			X	X	X		
U-4D	9/25/19	11:00	G	Water			X	X	X		
U-5D	9/25/19	12:00	G	Water			X	X	X		
U-5S	9/25/19	11:45	G	Water			X	X	X		

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]	9/27/19 9:30	GES	[signature]	9-27-19 0930	Eurofins
2				[signature]	9/28/19 0800	TAB
3					1000	

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: #1 2.4, 2.7, 3.0, 3.3, 2.6

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Dallas/Ft. Worth #238

Chain of Custody Record

TestAmerica Minneapolis SC 213

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Client Information	Sampler: N-Schlagel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-135736-30557.2
Client Contact: Nathaniel Beinemann	Phone: 651-792-6085	E-Mail: ryan.vandette@testamericainc.com		Page: Page 2 of 2
Company: Waste Connections, Inc.		Analysis Requested		Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Rosemount	TAT Requested (days): standard			
State, Zip: MN, 55068				
Phone:	PO #: Purchase Order Requested			Other:
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Rosemount	Project #: 48013709			
Site: Minnesota	SSOW#:			

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)	Ra226Ra228_GFPC - Radium 226/228	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D		
D-1D	9/26/19	9:30	6	Water			X	X	X		
D-2D	9/26/19	10:10	6	Water			X	X	X		
D-3D	9/25/19	10:00	6	Water			X	X	X		
D-4D	9/26/19	10:50	6	Water			X	X	X		
Dup 1	9/25/19	—	6	Water			X	X	X		
Dup 2	9/25/19	—	6	Water			X	X	X		
Equipment Blank	9/26/19	12:00	6	Water			X	X	X		
Field Blank	9/26/19	11:50	6	Water			X	X	X		
D-5D	9/25/19	13:15	6	Water			X	X	X		
D-4S	9/25/19	10:15	6	Water			X	X	X		

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:
			Eurofins

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		9/29/19 8:30	GES		9-27-19 0930	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 9/28/19 1000	Company TAB
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: #(2.4, 2.1, 3.0, 3.3, 2.6

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-160015-1

Login Number: 160015
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
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.	N/A	
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	GES
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Appendix C – Statistical Evaluation Data

1				**Nonparametric Background Statistics for Uncensored Full Data Sets**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.11/27/2020 8:37:15 AM								
4			From File	Rosemount source files saved_2019_BSJ.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			Number of Bootstrap Operations	2000								
9												
10	**|Boron|T^report_result_value**											
11												
12	**General Statistics**											
13						Total Number of Observations	150			Number of Distinct Observations	32		
14										Number of Missing Observations	138		
15						Minimum	0			First Quartile	20		
16						Second Largest	150			Median	20		
17						Maximum	150			Third Quartile	25		
18						Mean	26.99			SD	21.79		
19						Coefficient of Variation	0.807			Skewness	2.864		
20													
21						**Critical Values for Background Threshold Values (BTVs)**							
22						Tolerance Factor K (For UTL)	1.868			d2max (for USL)	3.343		
23													
24						**Nonparametric Distribution Free Background Statistics**							
25						**Data do not follow a Discernible Distribution (0.05)**							
26													
27						**Nonparametric Upper Limits for Background Threshold Values**							
28						Order of Statistic, r	146			95% UTL with 95% Coverage	74		
29						Approx, f used to compute achieved CC	1.537			Approximate Actual Confidence Coefficient achieved by UTL	0.874		
30										Approximate Sample Size needed to achieve specified CC	181		
31						95% Percentile Bootstrap UTL with 95% Coverage	74			95% BCA Bootstrap UTL with 95% Coverage	74		
32						95% UPL	66.8			90% Percentile	54		
33						90% Chebyshev UPL	92.57			95% Percentile	65		
34						95% Chebyshev UPL	122.3			99% Percentile	115.2		
35						95% USL	150						
36													
37	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
38	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
39	and consists of observations collected from clean unimpacted locations.												
40	The use of USL tends to provide a balance between false positives and false negatives provided the data												
41	represents a background data set and when many onsite observations need to be compared with the BTV.												
42													

43	**|Calcium|T^report_result_value**										
44											
45	**General Statistics**										
46						Total Number of Observations	160			Number of Distinct Observations	96
47										Number of Missing Observations	128
48						Minimum	0			First Quartile	89750
49						Second Largest	127000			Median	96100
50						Maximum	131000			Third Quartile	103000
51						Mean	88507			SD	31297
52						Coefficient of Variation	0.354			Skewness	-2.117
53											
54	**Critical Values for Background Threshold Values (BTVs)**										
55						Tolerance Factor K (For UTL)	1.86			d2max (for USL)	3.363
56											
57	**Nonparametric Distribution Free Background Statistics**										
58	**Data do not follow a Discernible Distribution (0.05)**										
59											
60	**Nonparametric Upper Limits for Background Threshold Values**										
61						Order of Statistic, r	156			95% UTL with 95% Coverage	121000
62						Approx, f used to compute achieved CC	1.642			Approximate Actual Confidence Coefficient achieved by UTL	0.906
63										Approximate Sample Size needed to achieve specified CC	181
64						95% Percentile Bootstrap UTL with 95% Coverage	121000			95% BCA Bootstrap UTL with 95% Coverage	121000
65						95% UPL	118950			90% Percentile	114100
66						90% Chebyshev UPL	182691			95% Percentile	118050
67						95% Chebyshev UPL	225354			99% Percentile	125230
68						95% USL	131000				
69											
70	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
71	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
72	and consists of observations collected from clean unimpacted locations.										
73	The use of USL tends to provide a balance between false positives and false negatives provided the data										
74	represents a background data set and when many onsite observations need to be compared with the BTV.										
75											

76	**|Chloride|T^report_result_value**										
77											
78	**General Statistics**										
79					Total Number of Observations	168			Number of Distinct Observations	136	
80									Number of Missing Observations	127	
81					Minimum	10400			First Quartile	32400	
82					Second Largest	78400			Median	40550	
83					Maximum	83500			Third Quartile	47100	
84					Mean	40242			SD	12928	
85					Coefficient of Variation	0.321			Skewness	0.416	
86					Mean of logged Data	10.55			SD of logged Data	0.354	
87											
88					**Critical Values for Background Threshold Values (BTVs)**						
89					Tolerance Factor K (For UTL)	1.855			d2max (for USL)	3.379	
90											
91					**Nonparametric Distribution Free Background Statistics**						
92					**Data do not follow a Discernible Distribution (0.05)**						
93											
94					**Nonparametric Upper Limits for Background Threshold Values**						
95					Order of Statistic, r	164			95% UTL with 95% Coverage	67800	
96					Approx, f used to compute achieved CC	1.726			Approximate Actual Confidence Coefficient achieved by UTL	0.926	
97									Approximate Sample Size needed to achieve specified CC	181	
98					95% Percentile Bootstrap UTL with 95% Coverage	67380			95% BCA Bootstrap UTL with 95% Coverage	67380	
99					95% UPL	65705			90% Percentile	53000	
100					90% Chebyshev UPL	79141			95% Percentile	64925	
101					95% Chebyshev UPL	96761			99% Percentile	74983	
102					95% USL	83500					
103											
104	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
105	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
106	and consists of observations collected from clean unimpacted locations.										
107	The use of USL tends to provide a balance between false positives and false negatives provided the data										
108	represents a background data set and when many onsite observations need to be compared with the BTV.										
109											

	A	B	C	D	E	F	G	H	I	J	K	L
110	**|Fluoride|T^report_result_value**											
111												
112	**General Statistics**											
113					Total Number of Observations	151				Number of Distinct Observations		15
114										Number of Missing Observations		137
115					Minimum	0				First Quartile		100
116					Second Largest	250				Median		100
117					Maximum	250				Third Quartile		250
118					Mean	138.9				SD		87.19
119					Coefficient of Variation	0.628				Skewness		0.149
120												
121	**Critical Values for Background Threshold Values (BTVs)**											
122					Tolerance Factor K (For UTL)	1.867				d2max (for USL)		3.345
123												
124	**Nonparametric Distribution Free Background Statistics**											
125	**Data do not follow a Discernible Distribution (0.05)**											
126												
127	**Nonparametric Upper Limits for Background Threshold Values**											
128					Order of Statistic, r	147				95% UTL with 95% Coverage		250
129					Approx, f used to compute achieved CC	1.547				Approximate Actual Confidence Coefficient achieved by UTL		0.878
130										Approximate Sample Size needed to achieve specified CC		181
131					95% Percentile Bootstrap UTL with 95% Coverage	250				95% BCA Bootstrap UTL with 95% Coverage		250
132					95% UPL	250				90% Percentile		250
133					90% Chebyshev UPL	401.4				95% Percentile		250
134					95% Chebyshev UPL	520.3				99% Percentile		250
135					95% USL	250						
136												
137	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
138	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
139	and consists of observations collected from clean unimpacted locations.											
140	The use of USL tends to provide a balance between false positives and false negatives provided the data											
141	represents a background data set and when many onsite observations need to be compared with the BTV.											
142												

|pH|T^report_result_value

General Statistics

Total Number of Observations	165	Number of Distinct Observations	16
		Number of Missing Observations	130
Minimum	7.2	First Quartile	7.5
Second Largest	8.1	Median	7.6
Maximum	8.2	Third Quartile	7.7
Mean	7.631	SD	0.191
Coefficient of Variation	0.0251	Skewness	0.378
Mean of logged Data	2.032	SD of logged Data	0.025

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.857	d2max (for USL)	3.373

Nonparametric Distribution Free Background Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, r	161	95% UTL with 95% Coverage	8.1
Approx, f used to compute achieved CC	1.695	Approximate Actual Confidence Coefficient achieved by UTL	0.919
		Approximate Sample Size needed to achieve specified CC	181
95% Percentile Bootstrap UTL with 95% Coverage	8.08	95% BCA Bootstrap UTL with 95% Coverage	8
95% UPL	8	90% Percentile	7.9
90% Chebyshev UPL	8.207	95% Percentile	8
95% Chebyshev UPL	8.467	99% Percentile	8.1
95% USL	8.2		

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.
Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers
and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data
represents a background data set and when many onsite observations need to be compared with the BTV.

177	**|Sulfate as SO4|T^report_result_value**											
178												
179	**General Statistics**											
180					Total Number of Observations	167			Number of Distinct Observations	123		
181									Number of Missing Observations	128		
182					Minimum	3500			First Quartile	27400		
183					Second Largest	77500			Median	30400		
184					Maximum	538000			Third Quartile	35100		
185					Mean	36027			SD	40334		
186					Coefficient of Variation	1.12			Skewness	11.76		
187					Mean of logged Data	10.37			SD of logged Data	0.406		
188												
189	**Critical Values for Background Threshold Values (BTVs)**											
190					Tolerance Factor K (For UTL)	1.855			d2max (for USL)	3.377		
191												
192	**Nonparametric Distribution Free Background Statistics**											
193	**Data do not follow a Discernible Distribution (0.05)**											
194												
195	**Nonparametric Upper Limits for Background Threshold Values**											
196					Order of Statistic, r	163			95% UTL with 95% Coverage	62900		
197					Approx, f used to compute achieved CC	1.716			Approximate Actual Confidence Coefficient achieved by UTL	0.924		
198									Approximate Sample Size needed to achieve specified CC	181		
199					95% Percentile Bootstrap UTL with 95% Coverage	61850			95% BCA Bootstrap UTL with 95% Coverage	61220		
200					95% UPL	55080			90% Percentile	46960		
201					90% Chebyshev UPL	157389			95% Percentile	51750		
202					95% Chebyshev UPL	212362			99% Percentile	70768		
203					95% USL	538000						
204												
205	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
206	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
207	and consists of observations collected from clean unimpacted locations.											
208	The use of USL tends to provide a balance between false positives and false negatives provided the data											
209	represents a background data set and when many onsite observations need to be compared with the BTV.											
210												

211	**|Total Dissolved Solids|T^report_result_value**											
212												
213	**General Statistics**											
214					Total Number of Observations	167			Number of Distinct Observations	109		
215									Number of Missing Observations	128		
216					Minimum	41800			First Quartile	411500		
217					Second Largest	683000			Median	430000		
218					Maximum	705000			Third Quartile	464500		
219					Mean	435050			SD	87419		
220					Coefficient of Variation	0.201			Skewness	-1.627		
221					Mean of logged Data	12.94			SD of logged Data	0.377		
222												
223	**Critical Values for Background Threshold Values (BTVs)**											
224					Tolerance Factor K (For UTL)	1.855			d2max (for USL)	3.377		
225												
226	**Nonparametric Distribution Free Background Statistics**											
227	**Data do not follow a Discernible Distribution (0.05)**											
228												
229	**Nonparametric Upper Limits for Background Threshold Values**											
230					Order of Statistic, r	163			95% UTL with 95% Coverage	591000		
231					Approx, f used to compute achieved CC	1.716			Approximate Actual Confidence Coefficient achieved by UTL	0.924		
232									Approximate Sample Size needed to achieve specified CC	181		
233					95% Percentile Bootstrap UTL with 95% Coverage	587700			95% BCA Bootstrap UTL with 95% Coverage	587700		
234					95% UPL	565200			90% Percentile	519000		
235					90% Chebyshev UPL	698092			95% Percentile	557400		
236					95% Chebyshev UPL	817241			99% Percentile	649340		
237					95% USL	705000						
238												
239	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
240	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
241	and consists of observations collected from clean unimpacted locations.											
242	The use of USL tends to provide a balance between false positives and false negatives provided the data											
243	represents a background data set and when many onsite observations need to be compared with the BTV.											
244												

1				**Background Statistics for Uncensored Full Data Sets**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.11/27/2020 5:19:09 PM								
4			From File	C:\Users\bjanowiak\Documents\My EQuIS Work\GES\SKB - Rosemount Facility\rosemount source file 2019 an								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			New or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**MW-1|Antimony|T^report_result_value**											
12												
13	**General Statistics**											
14						Total Number of Observations	219			Number of Distinct Observations	7		
15						Minimum	0.02			First Quartile	1		
16						Second Largest	1			Median	1		
17						Maximum	1			Third Quartile	1		
18						Mean	0.827			SD	0.368		
19						Coefficient of Variation	0.445			Skewness	-1.679		
20						Mean of logged Data	-0.63			SD of logged Data	1.385		
21													
22						**Critical Values for Background Threshold Values (BTVs)**							
23						Tolerance Factor K (For UTL)	1.827			d2max (for USL)	3.46		
24													
25						**Normal GOF Test**							
26						Shapiro Wilk Test Statistic	0.465			**Normal GOF Test**			
27						5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
28						Lilliefors Test Statistic	0.498			**Lilliefors GOF Test**			
29						5% Lilliefors Critical Value	0.0603			Data Not Normal at 5% Significance Level			
30						**Data Not Normal at 5% Significance Level**							
31													
32						**Background Statistics Assuming Normal Distribution**							
33						95% UTL with 95% Coverage	1.5			90% Percentile (z)	1.299		
34						95% UPL (t)	1.437			95% Percentile (z)	1.433		
35						95% USL	2.101			99% Percentile (z)	1.684		
36													
37						**Gamma GOF Test**							
38						A-D Test Statistic	61.14			**Anderson-Darling Gamma GOF Test**			
39						5% A-D Critical Value	0.777			Data Not Gamma Distributed at 5% Significance Level			
40						K-S Test Statistic	0.514			**Kolmogorov-Smirnov Gamma GOF Test**			
41						5% K-S Critical Value	0.0629			Data Not Gamma Distributed at 5% Significance Level			
42						**Data Not Gamma Distributed at 5% Significance Level**							
43													
44						**Gamma Statistics**							
45						k hat (MLE)	1.276			k star (bias corrected MLE)	1.262		
46						Theta hat (MLE)	0.648			Theta star (bias corrected MLE)	0.656		
47						nu hat (MLE)	558.9			nu star (bias corrected)	552.5		
48						MLE Mean (bias corrected)	0.827			MLE Sd (bias corrected)	0.736		
49													

50	**Background Statistics Assuming Gamma Distribution**											
51				95% Wilson Hilferty (WH) Approx. Gamma UPL		2.271				90% Percentile		1.798
52				95% Hawkins Wixley (HW) Approx. Gamma UPL		2.586				95% Percentile		2.285
53				95% WH Approx. Gamma UTL with 95% Coverage		2.513				99% Percentile		3.396
54				95% HW Approx. Gamma UTL with 95% Coverage		2.914						
55					95% WH USL	5.736				95% HW USL		7.838
56												
57	**Lognormal GOF Test**											
58					Shapiro Wilk Test Statistic	0.464	**Shapiro Wilk Lognormal GOF Test**					
59					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
60					Lilliefors Test Statistic	0.493	**Lilliefors Lognormal GOF Test**					
61					5% Lilliefors Critical Value	0.0603	Data Not Lognormal at 5% Significance Level					
62	**Data Not Lognormal at 5% Significance Level**											
63												
64	**Background Statistics assuming Lognormal Distribution**											
65					95% UTL with 95% Coverage	6.688				90% Percentile (z)		3.143
66					95% UPL (t)	5.277				95% Percentile (z)		5.199
67					95% USL	64.27				99% Percentile (z)		13.36
68												
69	**Nonparametric Distribution Free Background Statistics**											
70	**Data do not follow a Discernible Distribution (0.05)**											
71												
72	**Nonparametric Upper Limits for Background Threshold Values**											
73					Order of Statistic, r	213				95% UTL with 95% Coverage		1
74					Approx, f used to compute achieved CC	1.602				Approximate Actual Confidence Coefficient achieved by UTL		0.925
75										Approximate Sample Size needed to achieve specified CC		234
76				95% Percentile Bootstrap UTL with 95% Coverage		1				95% BCA Bootstrap UTL with 95% Coverage		1
77					95% UPL	1				90% Percentile		1
78					90% Chebyshev UPL	1.934				95% Percentile		1
79					95% Chebyshev UPL	2.436				99% Percentile		1
80					95% USL	1						
81												
82	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
83	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
84	and consists of observations collected from clean unimpacted locations.											
85	The use of USL tends to provide a balance between false positives and false negatives provided the data											
86	represents a background data set and when many onsite observations need to be compared with the BTV.											
87												

88	**MW-1|Arsenic|T^report_result_value**											
89												
90	**General Statistics**											
91					Total Number of Observations	219			Number of Distinct Observations	27		
92									Number of Missing Observations	12		
93					Minimum	0.015			First Quartile	1		
94					Second Largest	1			Median	1		
95					Maximum	1.6			Third Quartile	1		
96					Mean	0.832			SD	0.363		
97					Coefficient of Variation	0.437			Skewness	-1.603		
98					Mean of logged Data	-0.56			SD of logged Data	1.258		
99												
100					**Critical Values for Background Threshold Values (BTVs)**							
101					Tolerance Factor K (For UTL)	1.827			d2max (for USL)	3.46		
102												
103					**Normal GOF Test**							
104					Shapiro Wilk Test Statistic	0.507			**Normal GOF Test**			
105					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
106					Lilliefors Test Statistic	0.491			**Lilliefors GOF Test**			
107					5% Lilliefors Critical Value	0.0603			Data Not Normal at 5% Significance Level			
108					**Data Not Normal at 5% Significance Level**							
109												
110					**Background Statistics Assuming Normal Distribution**							
111					95% UTL with 95% Coverage	1.496			90% Percentile (z)	1.298		
112					95% UPL (t)	1.434			95% Percentile (z)	1.43		
113					95% USL	2.089			99% Percentile (z)	1.677		
114												
115					**Gamma GOF Test**							
116					A-D Test Statistic	57.14			**Anderson-Darling Gamma GOF Test**			
117					5% A-D Critical Value	0.772			Data Not Gamma Distributed at 5% Significance Level			
118					K-S Test Statistic	0.505			**Kolmogorov-Smirnov Gamma GOF Test**			
119					5% K-S Critical Value	0.0626			Data Not Gamma Distributed at 5% Significance Level			
120					**Data Not Gamma Distributed at 5% Significance Level**							
121												
122					**Gamma Statistics**							
123					k hat (MLE)	1.474			k star (bias corrected MLE)	1.457		
124					Theta hat (MLE)	0.565			Theta star (bias corrected MLE)	0.571		
125					nu hat (MLE)	645.7			nu star (bias corrected)	638.2		
126					MLE Mean (bias corrected)	0.832			MLE Sd (bias corrected)	0.689		
127												
128					**Background Statistics Assuming Gamma Distribution**							
129					95% Wilson Hilferty (WH) Approx. Gamma UPL	2.176			90% Percentile	1.747		
130					95% Hawkins Wixley (HW) Approx. Gamma UPL	2.444			95% Percentile	2.189		
131					95% WH Approx. Gamma UTL with 95% Coverage	2.395			99% Percentile	3.19		
132					95% HW Approx. Gamma UTL with 95% Coverage	2.735						
133					95% WH USL	5.28			95% HW USL	7.004		
134												
135					**Lognormal GOF Test**							
136					Shapiro Wilk Test Statistic	0.494			**Shapiro Wilk Lognormal GOF Test**			
137					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
138					Lilliefors Test Statistic	0.485			**Lilliefors Lognormal GOF Test**			
139					5% Lilliefors Critical Value	0.0603			Data Not Lognormal at 5% Significance Level			
140					**Data Not Lognormal at 5% Significance Level**							
141												

142	**Background Statistics assuming Lognormal Distribution**											
143				95% UTL with	95% Coverage	5.683				90% Percentile (z)		2.863
144					95% UPL (t)	4.583				95% Percentile (z)		4.521
145					95% USL	44.31				99% Percentile (z)		10.65
146												
147	**Nonparametric Distribution Free Background Statistics**											
148	**Data do not follow a Discernible Distribution (0.05)**											
149												
150	**Nonparametric Upper Limits for Background Threshold Values**											
151					Order of Statistic, r	213				95% UTL with	95% Coverage	1
152					Approx, f used to compute achieved CC	1.602				Approximate Actual Confidence Coefficient achieved by UTL		0.925
153										Approximate Sample Size needed to achieve specified CC		234
154				95% Percentile Bootstrap UTL with	95% Coverage	1				95% BCA Bootstrap UTL with	95% Coverage	1
155					95% UPL	1				90% Percentile		1
156					90% Chebyshev UPL	1.925				95% Percentile		1
157					95% Chebyshev UPL	2.42				99% Percentile		1
158					95% USL	1.6						
159												
160	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
161	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
162	and consists of observations collected from clean unimpacted locations.											
163	The use of USL tends to provide a balance between false positives and false negatives provided the data											
164	represents a background data set and when many onsite observations need to be compared with the BTV.											
165												

166	**MW-1|Barium|T^report_result_value**											
167												
168	**General Statistics**											
169					Total Number of Observations	195			Number of Distinct Observations	56		
170									Number of Missing Observations	19		
171					Minimum	0.002			First Quartile	0.05		
172					Second Largest	1.1			Median	0.055		
173					Maximum	1.1			Third Quartile	0.065		
174					Mean	0.103			SD	0.177		
175					Coefficient of Variation	1.711			Skewness	4.071		
176					Mean of logged Data	-2.731			SD of logged Data	0.765		
177												
178					**Critical Values for Background Threshold Values (BTVs)**							
179					Tolerance Factor K (For UTL)	1.838			d2max (for USL)	3.425		
180												
181					**Normal GOF Test**							
182					Shapiro Wilk Test Statistic	0.363			**Normal GOF Test**			
183					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
184					Lilliefors Test Statistic	0.457			**Lilliefors GOF Test**			
185					5% Lilliefors Critical Value	0.0639			Data Not Normal at 5% Significance Level			
186					**Data Not Normal at 5% Significance Level**							
187												
188					**Background Statistics Assuming Normal Distribution**							
189					95% UTL with 95% Coverage	0.428			90% Percentile (z)	0.33		
190					95% UPL (t)	0.396			95% Percentile (z)	0.394		
191					95% USL	0.708			99% Percentile (z)	0.514		
192												
193					**Gamma GOF Test**							
194					A-D Test Statistic	41.45			**Anderson-Darling Gamma GOF Test**			
195					5% A-D Critical Value	0.778			Data Not Gamma Distributed at 5% Significance Level			
196					K-S Test Statistic	0.403			**Kolmogorov-Smirnov Gamma GOF Test**			
197					5% K-S Critical Value	0.0665			Data Not Gamma Distributed at 5% Significance Level			
198					**Data Not Gamma Distributed at 5% Significance Level**							
199												
200					**Gamma Statistics**							
201					k hat (MLE)	1.226			k star (bias corrected MLE)	1.211		
202					Theta hat (MLE)	0.0842			Theta star (bias corrected MLE)	0.0853		
203					nu hat (MLE)	478.3			nu star (bias corrected)	472.3		
204					MLE Mean (bias corrected)	0.103			MLE Sd (bias corrected)	0.0938		
205												
206					**Background Statistics Assuming Gamma Distribution**							
207					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.266			90% Percentile	0.227		
208					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.253			95% Percentile	0.289		
209					95% WH Approx. Gamma UTL with 95% Coverage	0.297			99% Percentile	0.433		
210					95% HW Approx. Gamma UTL with 95% Coverage	0.285						
211					95% WH USL	0.689			95% HW USL	0.703		
212												
213					**Lognormal GOF Test**							
214					Shapiro Wilk Test Statistic	0.615			**Shapiro Wilk Lognormal GOF Test**			
215					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
216					Lilliefors Test Statistic	0.325			**Lilliefors Lognormal GOF Test**			
217					5% Lilliefors Critical Value	0.0639			Data Not Lognormal at 5% Significance Level			
218					**Data Not Lognormal at 5% Significance Level**							
219												

	A	B	C	D	E	F	G	H	I	J	K	L
220	**Background Statistics assuming Lognormal Distribution**											
221					95% UTL with 95% Coverage	0.266				90% Percentile (z)		0.174
222					95% UPL (t)	0.231				95% Percentile (z)		0.229
223					95% USL	0.895				99% Percentile (z)		0.386
224												
225	**Nonparametric Distribution Free Background Statistics**											
226	**Data do not follow a Discernible Distribution (0.05)**											
227												
228	**Nonparametric Upper Limits for Background Threshold Values**											
229					Order of Statistic, r	190				95% UTL with 95% Coverage		0.73
230					Approx, f used to compute achieved CC	1.667				Approximate Actual Confidence Coefficient achieved by UTL		0.928
231										Approximate Sample Size needed to achieve specified CC		208
232					95% Percentile Bootstrap UTL with 95% Coverage	0.716				95% BCA Bootstrap UTL with 95% Coverage		0.716
233					95% UPL	0.514				90% Percentile		0.0788
234					90% Chebyshev UPL	0.635				95% Percentile		0.493
235					95% Chebyshev UPL	0.876				99% Percentile		0.997
236					95% USL	1.1						
237												
238	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
239	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
240	and consists of observations collected from clean unimpacted locations.											
241	The use of USL tends to provide a balance between false positives and false negatives provided the data											
242	represents a background data set and when many onsite observations need to be compared with the BTV.											
243												

244	**MW-1|Beryllium|T^report_result_value**										
245											
246	**General Statistics**										
247					Total Number of Observations	36			Number of Distinct Observations	1	
248					Minimum	0.7			First Quartile	0.7	
249					Second Largest	0.7			Median	0.7	
250					Maximum	0.7			Third Quartile	0.7	
251					Mean	0.7			SD	3.378E-16	
252					Coefficient of Variation	4.826E-16			Skewness	1.044	
253											
254	**Warning: There is only one distinct observation value in this data set - resulting in '0' variance!**										
255	**ProUCL (or any other software) should not be used on such a data set!**										
256	**The data set for variable MW-1|Beryllium|T^report_result_value was not processed!**										
257											
258	**If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.**										
259	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**										
260											
261											
262	**MW-1|Cadmium|T^report_result_value**										
263											
264	**General Statistics**										
265					Total Number of Observations	231			Number of Distinct Observations	8	
266					Minimum	0.002			First Quartile	0.5	
267					Second Largest	0.5			Median	0.5	
268					Maximum	1			Third Quartile	0.5	
269					Mean	0.391			SD	0.21	
270					Coefficient of Variation	0.538			Skewness	-1.183	
271					Mean of logged Data	-1.827			SD of logged Data	2.161	
272											
273	**Critical Values for Background Threshold Values (BTVs)**										
274					Tolerance Factor K (For UTL)	1.822			d2max (for USL)	3.476	
275											
276	**Normal GOF Test**										
277					Shapiro Wilk Test Statistic	0.543			**Normal GOF Test**		
278					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level		
279					Lilliefors Test Statistic	0.473			**Lilliefors GOF Test**		
280					5% Lilliefors Critical Value	0.0587			Data Not Normal at 5% Significance Level		
281	**Data Not Normal at 5% Significance Level**										
282											
283	**Background Statistics Assuming Normal Distribution**										
284					95% UTL with 95% Coverage	0.774			90% Percentile (z)	0.661	
285					95% UPL (t)	0.739			95% Percentile (z)	0.737	
286					95% USL	1.123			99% Percentile (z)	0.881	
287											
288	**Gamma GOF Test**										
289					A-D Test Statistic	60.43			**Anderson-Darling Gamma GOF Test**		
290					5% A-D Critical Value	0.803			Data Not Gamma Distributed at 5% Significance Level		
291					K-S Test Statistic	0.505			**Kolmogorov-Smirnov Gamma GOF Test**		
292					5% K-S Critical Value	0.0628			Data Not Gamma Distributed at 5% Significance Level		
293	**Data Not Gamma Distributed at 5% Significance Level**										
294											

295	**Gamma Statistics**											
296					k hat (MLE)	0.683				k star (bias corrected MLE)		0.677
297					Theta hat (MLE)	0.573				Theta star (bias corrected MLE)		0.578
298					nu hat (MLE)	315.4				nu star (bias corrected)		312.7
299					MLE Mean (bias corrected)	0.391				MLE Sd (bias corrected)		0.475
300												
301	**Background Statistics Assuming Gamma Distribution**											
302				95% Wilson Hilferty (WH) Approx. Gamma UPL		1.32				90% Percentile		0.989
303				95% Hawkins Wixley (HW) Approx. Gamma UPL		1.601				95% Percentile		1.347
304				95% WH Approx. Gamma UTL with 95% Coverage		1.489				99% Percentile		2.204
305				95% HW Approx. Gamma UTL with 95% Coverage		1.853						
306					95% WH USL	4.003				95% HW USL		6.294
307												
308	**Lognormal GOF Test**											
309					Shapiro Wilk Test Statistic	0.522				**Shapiro Wilk Lognormal GOF Test**		
310					5% Shapiro Wilk P Value	0				Data Not Lognormal at 5% Significance Level		
311					Lilliefors Test Statistic	0.475				**Lilliefors Lognormal GOF Test**		
312					5% Lilliefors Critical Value	0.0587				Data Not Lognormal at 5% Significance Level		
313	**Data Not Lognormal at 5% Significance Level**											
314												
315	**Background Statistics assuming Lognormal Distribution**											
316					95% UTL with 95% Coverage	8.239				90% Percentile (z)		2.565
317					95% UPL (t)	5.75				95% Percentile (z)		5.624
318					95% USL	293.9				99% Percentile (z)		24.52
319												
320	**Nonparametric Distribution Free Background Statistics**											
321	**Data do not follow a Discernible Distribution (0.05)**											
322												
323	**Nonparametric Upper Limits for Background Threshold Values**											
324					Order of Statistic, r	224				95% UTL with 95% Coverage		0.5
325					Approx, f used to compute achieved CC	1.474				Approximate Actual Confidence Coefficient achieved by UTL		0.895
326										Approximate Sample Size needed to achieve specified CC		260
327				95% Percentile Bootstrap UTL with 95% Coverage		0.5				95% BCA Bootstrap UTL with 95% Coverage		0.5
328					95% UPL	0.5				90% Percentile		0.5
329					90% Chebyshev UPL	1.024				95% Percentile		0.5
330					95% Chebyshev UPL	1.31				99% Percentile		0.5
331					95% USL	1						
332												
333	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
334	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
335	and consists of observations collected from clean unimpacted locations.											
336	The use of USL tends to provide a balance between false positives and false negatives provided the data											
337	represents a background data set and when many onsite observations need to be compared with the BTV.											
338												

339	**MW-1|Chromium|T^report_result_value**											
340												
341	**General Statistics**											
342					Total Number of Observations	221			Number of Distinct Observations	42		
343									Number of Missing Observations	10		
344					Minimum	0.004			First Quartile	0.004		
345					Second Largest	0.053			Median	0.004		
346					Maximum	0.06			Third Quartile	0.004		
347					Mean	0.00778			SD	0.0104		
348					Coefficient of Variation	1.331			Skewness	3.133		
349					Mean of logged Data	-5.223			SD of logged Data	0.68		
350												
351	**Critical Values for Background Threshold Values (BTVs)**											
352					Tolerance Factor K (For UTL)	1.826			d2max (for USL)	3.463		
353												
354	**Normal GOF Test**											
355					Shapiro Wilk Test Statistic	0.428			**Normal GOF Test**			
356					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
357					Lilliefors Test Statistic	0.416			**Lilliefors GOF Test**			
358					5% Lilliefors Critical Value	0.06			Data Not Normal at 5% Significance Level			
359	**Data Not Normal at 5% Significance Level**											
360												
361	**Background Statistics Assuming Normal Distribution**											
362					95% UTL with 95% Coverage	0.0267			90% Percentile (z)	0.0211		
363					95% UPL (t)	0.0249			95% Percentile (z)	0.0248		
364					95% USL	0.0437			99% Percentile (z)	0.0319		
365												
366	**Gamma GOF Test**											
367					A-D Test Statistic	54.55			**Anderson-Darling Gamma GOF Test**			
368					5% A-D Critical Value	0.771			Data Not Gamma Distributed at 5% Significance Level			
369					K-S Test Statistic	0.447			**Kolmogorov-Smirnov Gamma GOF Test**			
370					5% K-S Critical Value	0.0624			Data Not Gamma Distributed at 5% Significance Level			
371	**Data Not Gamma Distributed at 5% Significance Level**											
372												
373	**Gamma Statistics**											
374					k hat (MLE)	1.507			k star (bias corrected MLE)	1.49		
375					Theta hat (MLE)	0.00516			Theta star (bias corrected MLE)	0.00522		
376					nu hat (MLE)	666.1			nu star (bias corrected)	658.4		
377					MLE Mean (bias corrected)	0.00778			MLE Sd (bias corrected)	0.00638		
378												
379	**Background Statistics Assuming Gamma Distribution**											
380					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.0193			90% Percentile	0.0162		
381					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.0186			95% Percentile	0.0203		
382					95% WH Approx. Gamma UTL with 95% Coverage	0.0213			99% Percentile	0.0295		
383					95% HW Approx. Gamma UTL with 95% Coverage	0.0206						
384					95% WH USL	0.0482			95% HW USL	0.0496		
385												
386	**Lognormal GOF Test**											
387					Shapiro Wilk Test Statistic	0.495			**Shapiro Wilk Lognormal GOF Test**			
388					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
389					Lilliefors Test Statistic	0.443			**Lilliefors Lognormal GOF Test**			
390					5% Lilliefors Critical Value	0.06			Data Not Lognormal at 5% Significance Level			
391	**Data Not Lognormal at 5% Significance Level**											
392												

393	**Background Statistics assuming Lognormal Distribution**											
394				95% UTL with	95% Coverage	0.0186				90% Percentile (z)		0.0129
395					95% UPL (t)	0.0166				95% Percentile (z)		0.0165
396					95% USL	0.0567				99% Percentile (z)		0.0262
397												
398	**Nonparametric Distribution Free Background Statistics**											
399	**Data do not follow a Discernible Distribution (0.05)**											
400												
401	**Nonparametric Upper Limits for Background Threshold Values**											
402					Order of Statistic, r	215				95% UTL with	95% Coverage	0.04
403				Approx, f used to compute achieved CC		1.617				Approximate Actual Confidence Coefficient achieved by UTL		0.929
404										Approximate Sample Size needed to achieve specified CC		234
405				95% Percentile Bootstrap UTL with	95% Coverage	0.04				95% BCA Bootstrap UTL with	95% Coverage	0.039
406					95% UPL	0.0349				90% Percentile		0.02
407					90% Chebyshev UPL	0.0389				95% Percentile		0.034
408					95% Chebyshev UPL	0.053				99% Percentile		0.052
409					95% USL	0.06						
410												
411	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
412	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
413	and consists of observations collected from clean unimpacted locations.											
414	The use of USL tends to provide a balance between false positives and false negatives provided the data											
415	represents a background data set and when many onsite observations need to be compared with the BTV.											
416												

417	**MW-1|Cobalt|T^report_result_value**										
418											
419	**General Statistics**										
420					Total Number of Observations	175			Number of Distinct Observations	21	
421									Number of Missing Observations	4	
422					Minimum	0.3			First Quartile	0.3	
423					Second Largest	0.88			Median	0.3	
424					Maximum	1.2			Third Quartile	0.3	
425					Mean	0.336			SD	0.118	
426					Coefficient of Variation	0.351			Skewness	4.465	
427					Mean of logged Data	-1.126			SD of logged Data	0.228	
428											
429					**Critical Values for Background Threshold Values (BTVs)**						
430					Tolerance Factor K (For UTL)	1.85			d2max (for USL)	3.391	
431											
432					**Normal GOF Test**						
433					Shapiro Wilk Test Statistic	0.366			**Normal GOF Test**		
434					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level		
435					Lilliefors Test Statistic	0.436			**Lilliefors GOF Test**		
436					5% Lilliefors Critical Value	0.0674			Data Not Normal at 5% Significance Level		
437					**Data Not Normal at 5% Significance Level**						
438											
439					**Background Statistics Assuming Normal Distribution**						
440					95% UTL with 95% Coverage	0.553			90% Percentile (z)	0.486	
441					95% UPL (t)	0.531			95% Percentile (z)	0.529	
442					95% USL	0.735			99% Percentile (z)	0.609	
443											
444					**Gamma GOF Test**						
445					A-D Test Statistic	46.63			**Anderson-Darling Gamma GOF Test**		
446					5% A-D Critical Value	0.751			Data Not Gamma Distributed at 5% Significance Level		
447					K-S Test Statistic	0.449			**Kolmogorov-Smirnov Gamma GOF Test**		
448					5% K-S Critical Value	0.07			Data Not Gamma Distributed at 5% Significance Level		
449					**Data Not Gamma Distributed at 5% Significance Level**						
450											
451					**Gamma Statistics**						
452					k hat (MLE)	14.84			k star (bias corrected MLE)	14.59	
453					Theta hat (MLE)	0.0226			Theta star (bias corrected MLE)	0.023	
454					nu hat (MLE)	5193			nu star (bias corrected)	5105	
455					MLE Mean (bias corrected)	0.336			MLE Sd (bias corrected)	0.0879	
456											
457					**Background Statistics Assuming Gamma Distribution**						
458					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.49			90% Percentile	0.452	
459					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.486			95% Percentile	0.492	
460					95% WH Approx. Gamma UTL with 95% Coverage	0.512			99% Percentile	0.573	
461					95% HW Approx. Gamma UTL with 95% Coverage	0.507					
462					95% WH USL	0.711			95% HW USL	0.708	
463											
464					**Lognormal GOF Test**						
465					Shapiro Wilk Test Statistic	0.408			**Shapiro Wilk Lognormal GOF Test**		
466					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level		
467					Lilliefors Test Statistic	0.451			**Lilliefors Lognormal GOF Test**		
468					5% Lilliefors Critical Value	0.0674			Data Not Lognormal at 5% Significance Level		
469					**Data Not Lognormal at 5% Significance Level**						
470											

471	**Background Statistics assuming Lognormal Distribution**											
472				95% UTL with	95% Coverage	0.494				90% Percentile (z)		0.434
473					95% UPL (t)	0.473				95% Percentile (z)		0.472
474					95% USL	0.702				99% Percentile (z)		0.551
475												
476	**Nonparametric Distribution Free Background Statistics**											
477	**Data do not follow a Discernible Distribution (0.05)**											
478												
479	**Nonparametric Upper Limits for Background Threshold Values**											
480					Order of Statistic, r	170				95% UTL with	95% Coverage	0.74
481				Approx, f used to compute achieved CC		1.491				Approximate Actual Confidence Coefficient achieved by UTL		0.875
482										Approximate Sample Size needed to achieve specified CC		208
483			95% Percentile Bootstrap UTL with		95% Coverage	0.74				95% BCA Bootstrap UTL with	95% Coverage	0.74
484					95% UPL	0.548				90% Percentile		0.37
485					90% Chebyshev UPL	0.69				95% Percentile		0.533
486					95% Chebyshev UPL	0.85				99% Percentile		0.821
487					95% USL	1.2						
488												
489	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
490	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
491	and consists of observations collected from clean unimpacted locations.											
492	The use of USL tends to provide a balance between false positives and false negatives provided the data											
493	represents a background data set and when many onsite observations need to be compared with the BTV.											
494												

495	**MW-1|Lead|T^report_result_value**											
496												
497	**General Statistics**											
498					Total Number of Observations	222			Number of Distinct Observations	11		
499									Number of Missing Observations	9		
500					Minimum	0.01			First Quartile	0.01		
501					Second Largest	0.05			Median	0.01		
502					Maximum	0.05			Third Quartile	0.01		
503					Mean	0.012			SD	0.00822		
504					Coefficient of Variation	0.685			Skewness	4.199		
505					Mean of logged Data	-4.517			SD of logged Data	0.344		
506												
507					**Critical Values for Background Threshold Values (BTVs)**							
508					Tolerance Factor K (For UTL)	1.825			d2max (for USL)	3.464		
509												
510					**Normal GOF Test**							
511					Shapiro Wilk Test Statistic	0.258			**Normal GOF Test**			
512					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
513					Lilliefors Test Statistic	0.511			**Lilliefors GOF Test**			
514					5% Lilliefors Critical Value	0.0599			Data Not Normal at 5% Significance Level			
515					**Data Not Normal at 5% Significance Level**							
516												
517					**Background Statistics Assuming Normal Distribution**							
518					95% UTL with 95% Coverage	0.027			90% Percentile (z)	0.0225		
519					95% UPL (t)	0.0256			95% Percentile (z)	0.0255		
520					95% USL	0.0405			99% Percentile (z)	0.0311		
521												
522					**Gamma GOF Test**							
523					A-D Test Statistic	75.12			**Anderson-Darling Gamma GOF Test**			
524					5% A-D Critical Value	0.756			Data Not Gamma Distributed at 5% Significance Level			
525					K-S Test Statistic	0.521			**Kolmogorov-Smirnov Gamma GOF Test**			
526					5% K-S Critical Value	0.0612			Data Not Gamma Distributed at 5% Significance Level			
527					**Data Not Gamma Distributed at 5% Significance Level**							
528												
529					**Gamma Statistics**							
530					k hat (MLE)	5.479			k star (bias corrected MLE)	5.408		
531					Theta hat (MLE)	0.00219			Theta star (bias corrected MLE)	0.00222		
532					nu hat (MLE)	2432			nu star (bias corrected)	2401		
533					MLE Mean (bias corrected)	0.012			MLE Sd (bias corrected)	0.00516		
534												
535					**Background Statistics Assuming Gamma Distribution**							
536					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.0212			90% Percentile	0.0189		
537					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.0207			95% Percentile	0.0216		
538					95% WH Approx. Gamma UTL with 95% Coverage	0.0225			99% Percentile	0.0271		
539					95% HW Approx. Gamma UTL with 95% Coverage	0.022						
540					95% WH USL	0.0376			95% HW USL	0.0372		
541												
542					**Lognormal GOF Test**							
543					Shapiro Wilk Test Statistic	0.275			**Shapiro Wilk Lognormal GOF Test**			
544					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
545					Lilliefors Test Statistic	0.516			**Lilliefors Lognormal GOF Test**			
546					5% Lilliefors Critical Value	0.0599			Data Not Lognormal at 5% Significance Level			
547					**Data Not Lognormal at 5% Significance Level**							
548												

549	**Background Statistics assuming Lognormal Distribution**											
550				95% UTL with	95% Coverage	0.0205				90% Percentile (z)		0.017
551					95% UPL (t)	0.0193				95% Percentile (z)		0.0192
552					95% USL	0.0359				99% Percentile (z)		0.0243
553												
554	**Nonparametric Distribution Free Background Statistics**											
555	**Data do not follow a Discernible Distribution (0.05)**											
556												
557	**Nonparametric Upper Limits for Background Threshold Values**											
558					Order of Statistic, r	216				95% UTL with	95% Coverage	0.05
559					Approx, f used to compute achieved CC	1.624				Approximate Actual Confidence Coefficient achieved by UTL		0.93
560										Approximate Sample Size needed to achieve specified CC		234
561				95% Percentile Bootstrap UTL with	95% Coverage	0.05				95% BCA Bootstrap UTL with	95% Coverage	0.05
562					95% UPL	0.0296				90% Percentile		0.01
563					90% Chebyshev UPL	0.0367				95% Percentile		0.0219
564					95% Chebyshev UPL	0.0479				99% Percentile		0.05
565					95% USL	0.05						
566												
567	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
568	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
569	and consists of observations collected from clean unimpacted locations.											
570	The use of USL tends to provide a balance between false positives and false negatives provided the data											
571	represents a background data set and when many onsite observations need to be compared with the BTV.											
572												

	A	B	C	D	E	F	G	H	I	J	K	L
573	**MW-1|Lithium|T^report_result_value**											
574												
575	**General Statistics**											
576					Total Number of Observations	179			Number of Distinct Observations			1
577					Minimum	0.03			First Quartile			0.03
578					Second Largest	0.03			Median			0.03
579					Maximum	0.03			Third Quartile			0.03
580					Mean	0.03			SD			0
581					Coefficient of Variation	0			Skewness			N/A
582												
583	**Warning: There is only one distinct observation value in this data set - resulting in '0' variance!**											
584	**ProUCL (or any other software) should not be used on such a data set!**											
585	**The data set for variable MW-1|Lithium|T^report_result_value was not processed!**											
586												
587	**If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.**											
588	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
589												
590												
591	**MW-1|Mercury|T^report_result_value**											
592												
593	**General Statistics**											
594					Total Number of Observations	232			Number of Distinct Observations			6
595					Minimum	2.0000E-4			First Quartile			0.2
596					Second Largest	0.2			Median			0.2
597					Maximum	0.2			Third Quartile			0.2
598					Mean	0.155			SD			0.0833
599					Coefficient of Variation	0.536			Skewness			-1.332
600					Mean of logged Data	-3.035			SD of logged Data			2.697
601												
602	**Critical Values for Background Threshold Values (BTVs)**											
603					Tolerance Factor K (For UTL)	1.821			d2max (for USL)			3.477
604												
605	**Normal GOF Test**											
606					Shapiro Wilk Test Statistic	0.5			**Normal GOF Test**			
607					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
608					Lilliefors Test Statistic	0.48			**Lilliefors GOF Test**			
609					5% Lilliefors Critical Value	0.0586			Data Not Normal at 5% Significance Level			
610	**Data Not Normal at 5% Significance Level**											
611												
612	**Background Statistics Assuming Normal Distribution**											
613					95% UTL with 95% Coverage	0.307			90% Percentile (z)			0.262
614					95% UPL (t)	0.293			95% Percentile (z)			0.292
615					95% USL	0.445			99% Percentile (z)			0.349
616												
617	**Gamma GOF Test**											
618					A-D Test Statistic	63.93			**Anderson-Darling Gamma GOF Test**			
619					5% A-D Critical Value	0.818			Data Not Gamma Distributed at 5% Significance Level			
620					K-S Test Statistic	0.516			**Kolmogorov-Smirnov Gamma GOF Test**			
621					5% K-S Critical Value	0.0633			Data Not Gamma Distributed at 5% Significance Level			
622	**Data Not Gamma Distributed at 5% Significance Level**											
623												

624	**Gamma Statistics**											
625					k hat (MLE)	0.536				k star (bias corrected MLE)		0.532
626					Theta hat (MLE)	0.29				Theta star (bias corrected MLE)		0.292
627					nu hat (MLE)	248.7				nu star (bias corrected)		246.8
628					MLE Mean (bias corrected)	0.155				MLE Sd (bias corrected)		0.213
629												
630	**Background Statistics Assuming Gamma Distribution**											
631				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.56				90% Percentile		0.415
632				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.707				95% Percentile		0.584
633				95% WH Approx. Gamma UTL with 95% Coverage		0.635				99% Percentile		0.996
634				95% HW Approx. Gamma UTL with 95% Coverage		0.827						
635					95% WH USL	1.787				95% HW USL		3.038
636												
637	**Lognormal GOF Test**											
638					Shapiro Wilk Test Statistic	0.517	**Shapiro Wilk Lognormal GOF Test**					
639					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
640					Lilliefors Test Statistic	0.477	**Lilliefors Lognormal GOF Test**					
641					5% Lilliefors Critical Value	0.0586	Data Not Lognormal at 5% Significance Level					
642	**Data Not Lognormal at 5% Significance Level**											
643												
644	**Background Statistics assuming Lognormal Distribution**											
645					95% UTL with 95% Coverage	6.537				90% Percentile (z)		1.525
646					95% UPL (t)	4.176				95% Percentile (z)		4.063
647					95% USL	569				99% Percentile (z)		25.53
648												
649	**Nonparametric Distribution Free Background Statistics**											
650	**Data do not follow a Discernible Distribution (0.05)**											
651												
652	**Nonparametric Upper Limits for Background Threshold Values**											
653					Order of Statistic, r	225				95% UTL with 95% Coverage		0.2
654					Approx, f used to compute achieved CC	1.48				Approximate Actual Confidence Coefficient achieved by UTL		0.897
655										Approximate Sample Size needed to achieve specified CC		260
656				95% Percentile Bootstrap UTL with 95% Coverage		0.2				95% BCA Bootstrap UTL with 95% Coverage		0.2
657					95% UPL	0.2				90% Percentile		0.2
658					90% Chebyshev UPL	0.406				95% Percentile		0.2
659					95% Chebyshev UPL	0.519				99% Percentile		0.2
660					95% USL	0.2						
661												
662	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
663	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
664	and consists of observations collected from clean unimpacted locations.											
665	The use of USL tends to provide a balance between false positives and false negatives provided the data											
666	represents a background data set and when many onsite observations need to be compared with the BTV.											
667												

668	**MW-1|MOLYBDENUM|T^report_result_value**											
669												
670	**General Statistics**											
671					Total Number of Observations	182			Number of Distinct Observations	5		
672									Number of Missing Observations	4		
673					Minimum	0.018			First Quartile	1		
674					Second Largest	1			Median	1		
675					Maximum	1.2			Third Quartile	1		
676					Mean	0.985			SD	0.123		
677					Coefficient of Variation	0.125			Skewness	-7.468		
678					Mean of logged Data	-0.0523			SD of logged Data	0.419		
679												
680	**Critical Values for Background Threshold Values (BTVs)**											
681					Tolerance Factor K (For UTL)	1.846			d2max (for USL)	3.403		
682												
683	**Normal GOF Test**											
684					Shapiro Wilk Test Statistic	0.145			**Normal GOF Test**			
685					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
686					Lilliefors Test Statistic	0.531			**Lilliefors GOF Test**			
687					5% Lilliefors Critical Value	0.0661			Data Not Normal at 5% Significance Level			
688	**Data Not Normal at 5% Significance Level**											
689												
690	**Background Statistics Assuming Normal Distribution**											
691					95% UTL with 95% Coverage	1.212			90% Percentile (z)	1.143		
692					95% UPL (t)	1.189			95% Percentile (z)	1.188		
693					95% USL	1.404			99% Percentile (z)	1.271		
694												
695	**Gamma GOF Test**											
696					A-D Test Statistic	68.58			**Anderson-Darling Gamma GOF Test**			
697					5% A-D Critical Value	0.751			Data Not Gamma Distributed at 5% Significance Level			
698					K-S Test Statistic	0.541			**Kolmogorov-Smirnov Gamma GOF Test**			
699					5% K-S Critical Value	0.0682			Data Not Gamma Distributed at 5% Significance Level			
700	**Data Not Gamma Distributed at 5% Significance Level**											
701												
702	**Gamma Statistics**											
703					k hat (MLE)	13.49			k star (bias corrected MLE)	13.27		
704					Theta hat (MLE)	0.0731			Theta star (bias corrected MLE)	0.0743		
705					nu hat (MLE)	4909			nu star (bias corrected)	4830		
706					MLE Mean (bias corrected)	0.985			MLE Sd (bias corrected)	0.271		
707												
708	**Background Statistics Assuming Gamma Distribution**											
709					95% Wilson Hilferty (WH) Approx. Gamma UPL	1.438			90% Percentile	1.344		
710					95% Hawkins Wixley (HW) Approx. Gamma UPL	1.51			95% Percentile	1.468		
711					95% WH Approx. Gamma UTL with 95% Coverage	1.5			99% Percentile	1.721		
712					95% HW Approx. Gamma UTL with 95% Coverage	1.584						
713					95% WH USL	2.075			95% HW USL	2.304		
714												
715	**Lognormal GOF Test**											
716					Shapiro Wilk Test Statistic	0.135			**Shapiro Wilk Lognormal GOF Test**			
717					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
718					Lilliefors Test Statistic	0.533			**Lilliefors Lognormal GOF Test**			
719					5% Lilliefors Critical Value	0.0661			Data Not Lognormal at 5% Significance Level			
720	**Data Not Lognormal at 5% Significance Level**											
721												

	A	B	C	D	E	F	G	H	I	J	K	L
722	**Background Statistics assuming Lognormal Distribution**											
723					95% UTL with 95% Coverage	2.058				90% Percentile (z)		1.625
724					95% UPL (t)	1.902				95% Percentile (z)		1.892
725					95% USL	3.956				99% Percentile (z)		2.518
726												
727	**Nonparametric Distribution Free Background Statistics**											
728	**Data do not follow a Discernible Distribution (0.05)**											
729												
730	**Nonparametric Upper Limits for Background Threshold Values**											
731					Order of Statistic, r	177				95% UTL with 95% Coverage		1
732					Approx, f used to compute achieved CC	1.553				Approximate Actual Confidence Coefficient achieved by UTL		0.896
733										Approximate Sample Size needed to achieve specified CC		208
734					95% Percentile Bootstrap UTL with 95% Coverage	1				95% BCA Bootstrap UTL with 95% Coverage		1
735					95% UPL	1				90% Percentile		1
736					90% Chebyshev UPL	1.355				95% Percentile		1
737					95% Chebyshev UPL	1.523				99% Percentile		1
738					95% USL	1.2						
739												
740	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
741	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
742	and consists of observations collected from clean unimpacted locations.											
743	The use of USL tends to provide a balance between false positives and false negatives provided the data											
744	represents a background data set and when many onsite observations need to be compared with the BTV.											
745												

823	**MW-1|Selenium|T^report_result_value**										
824											
825	**General Statistics**										
826					Total Number of Observations	231			Number of Distinct Observations	14	
827					Minimum	0.025			First Quartile	1	
828					Second Largest	1.9			Median	1	
829					Maximum	2.1			Third Quartile	1	
830					Mean	0.814			SD	0.43	
831					Coefficient of Variation	0.528			Skewness	-0.933	
832					Mean of logged Data	-0.74			SD of logged Data	1.474	
833											
834					**Critical Values for Background Threshold Values (BTVs)**						
835					Tolerance Factor K (For UTL)	1.822			d2max (for USL)	3.476	
836											
837					**Normal GOF Test**						
838					Shapiro Wilk Test Statistic	0.646			**Normal GOF Test**		
839					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level		
840					Lilliefors Test Statistic	0.442			**Lilliefors GOF Test**		
841					5% Lilliefors Critical Value	0.0587			Data Not Normal at 5% Significance Level		
842					**Data Not Normal at 5% Significance Level**						
843											
844					**Background Statistics Assuming Normal Distribution**						
845					95% UTL with 95% Coverage	1.597			90% Percentile (z)	1.365	
846					95% UPL (t)	1.525			95% Percentile (z)	1.521	
847					95% USL	2.308			99% Percentile (z)	1.814	
848											
849					**Gamma GOF Test**						
850					A-D Test Statistic	53.02			**Anderson-Darling Gamma GOF Test**		
851					5% A-D Critical Value	0.782			Data Not Gamma Distributed at 5% Significance Level		
852					K-S Test Statistic	0.481			**Kolmogorov-Smirnov Gamma GOF Test**		
853					5% K-S Critical Value	0.0617			Data Not Gamma Distributed at 5% Significance Level		
854					**Data Not Gamma Distributed at 5% Significance Level**						
855											
856					**Gamma Statistics**						
857					k hat (MLE)	1.072			k star (bias corrected MLE)	1.061	
858					Theta hat (MLE)	0.759			Theta star (bias corrected MLE)	0.767	
859					nu hat (MLE)	495.2			nu star (bias corrected)	490.1	
860					MLE Mean (bias corrected)	0.814			MLE Sd (bias corrected)	0.79	
861											
862					**Background Statistics Assuming Gamma Distribution**						
863					95% Wilson Hilferty (WH) Approx. Gamma UPL	2.387			90% Percentile	1.847	
864					95% Hawkins Wixley (HW) Approx. Gamma UPL	2.716			95% Percentile	2.389	
865					95% WH Approx. Gamma UTL with 95% Coverage	2.654			99% Percentile	3.64	
866					95% HW Approx. Gamma UTL with 95% Coverage	3.077					
867					95% WH USL	6.461			95% HW USL	8.931	
868											
869					**Lognormal GOF Test**						
870					Shapiro Wilk Test Statistic	0.543			**Shapiro Wilk Lognormal GOF Test**		
871					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level		
872					Lilliefors Test Statistic	0.467			**Lilliefors Lognormal GOF Test**		
873					5% Lilliefors Critical Value	0.0587			Data Not Lognormal at 5% Significance Level		
874					**Data Not Lognormal at 5% Significance Level**						
875											

876	**Background Statistics assuming Lognormal Distribution**											
877				95% UTL with	95% Coverage	6.999				90% Percentile (z)		3.157
878					95% UPL (t)	5.476				95% Percentile (z)		5.394
879					95% USL	80.22				99% Percentile (z)		14.73
880												
881	**Nonparametric Distribution Free Background Statistics**											
882	**Data do not follow a Discernible Distribution (0.05)**											
883												
884	**Nonparametric Upper Limits for Background Threshold Values**											
885					Order of Statistic, r	224				95% UTL with	95% Coverage	1.3
886					Approx, f used to compute achieved CC	1.474				Approximate Actual Confidence Coefficient achieved by UTL		0.895
887										Approximate Sample Size needed to achieve specified CC		260
888				95% Percentile Bootstrap UTL with	95% Coverage	1.3				95% BCA Bootstrap UTL with	95% Coverage	1.05
889					95% UPL	1.14				90% Percentile		1
890					90% Chebyshev UPL	2.106				95% Percentile		1.1
891					95% Chebyshev UPL	2.691				99% Percentile		1.64
892					95% USL	2.1						
893												
894	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
895	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
896	and consists of observations collected from clean unimpacted locations.											
897	The use of USL tends to provide a balance between false positives and false negatives provided the data											
898	represents a background data set and when many onsite observations need to be compared with the BTV.											
899												

	Background Statistics for Uncensored Full Data Sets	
User Selected Options		
Date/Time of Computation	ProUCL 5.11/28/2020 3:00:40 PM	
From File	C:\Users\bjanowiak\Documents\My EQuIS Work\GES\SKB - Rosemount Facility\rosemount source file 2019 an	
Full Precision	OFF	
Confidence Coefficient	95%	
Coverage	95%	
New or Future K Observations	1	
Number of Bootstrap Operations	2000	

Radium 226

General Statistics

Total Number of Observations	106	Number of Distinct Observations	85
Minimum	0.0616	First Quartile	0.0855
Second Largest	1	Median	0.108
Maximum	2.04	Third Quartile	0.148
Mean	0.201	SD	0.291
Coefficient of Variation	1.444	Skewness	3.841
Mean of logged Data	-2.007	SD of logged Data	0.728

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.915	d2max (for USL)	3.229

Normal GOF Test

Shapiro Wilk Test Statistic	0.472	**Normal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.338	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0863	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	0.758	90% Percentile (z)	0.574
95% UPL (t)	0.686	95% Percentile (z)	0.679
95% USL	1.14	99% Percentile (z)	0.877

Gamma GOF Test

A-D Test Statistic	13.33	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.773	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.279	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.0898	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.381	k star (bias corrected MLE)	1.348
Theta hat (MLE)	0.146	Theta star (bias corrected MLE)	0.149
nu hat (MLE)	292.8	nu star (bias corrected)	285.9
MLE Mean (bias corrected)	0.201	MLE Sd (bias corrected)	0.173

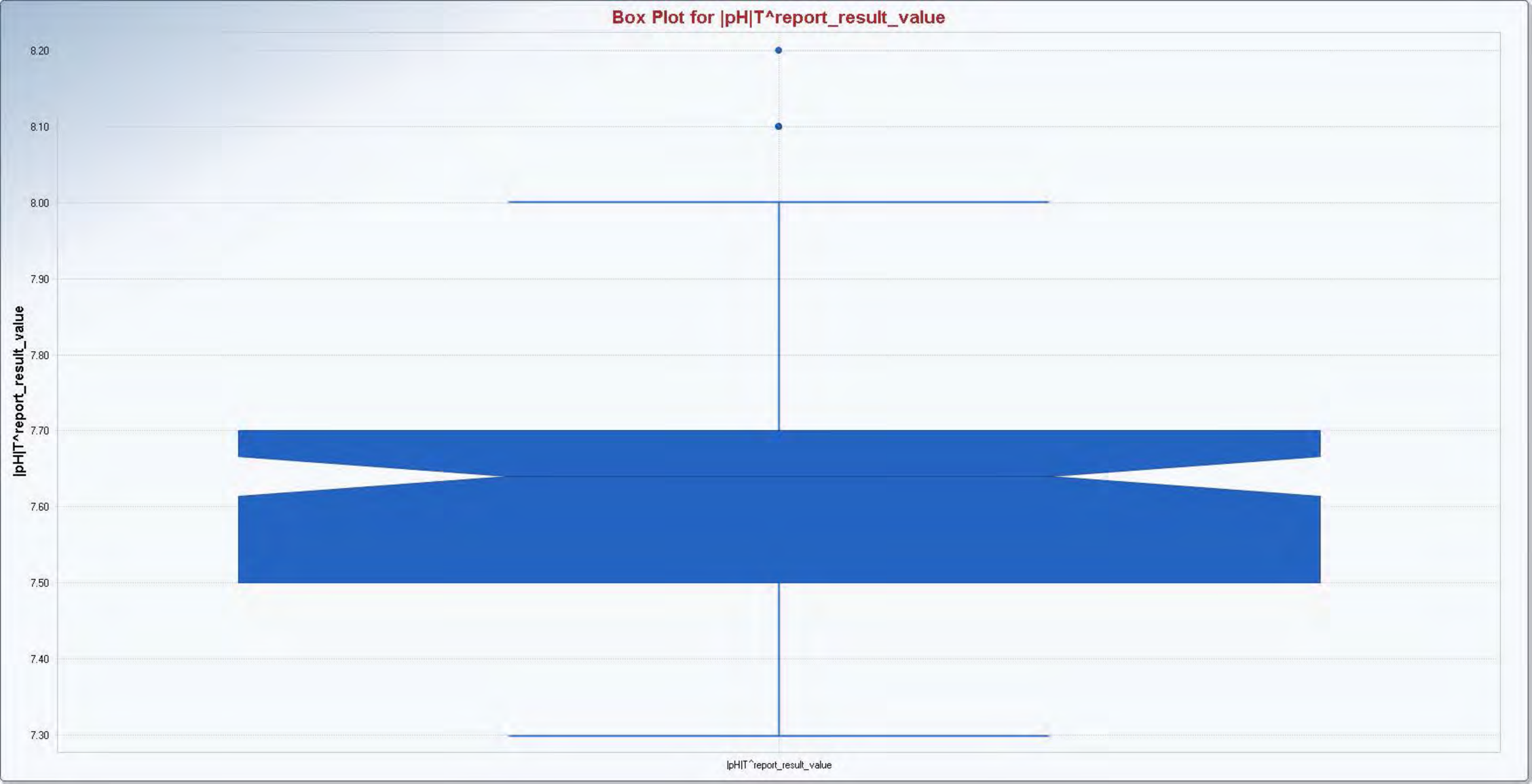
50	**Background Statistics Assuming Gamma Distribution**											
51				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.516				90% Percentile		0.43
52				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.498				95% Percentile		0.543
53				95% WH Approx. Gamma UTL with 95% Coverage		0.597				99% Percentile		0.8
54				95% HW Approx. Gamma UTL with 95% Coverage		0.581						
55				95% WH USL		1.18				95% HW USL		1.212
56												
57	**Lognormal GOF Test**											
58				Shapiro Wilk Test Statistic		0.768	**Shapiro Wilk Lognormal GOF Test**					
59				5% Shapiro Wilk P Value		0	Data Not Lognormal at 5% Significance Level					
60				Lilliefors Test Statistic		0.204	**Lilliefors Lognormal GOF Test**					
61				5% Lilliefors Critical Value		0.0863	Data Not Lognormal at 5% Significance Level					
62	**Data Not Lognormal at 5% Significance Level**											
63												
64	**Background Statistics assuming Lognormal Distribution**											
65				95% UTL with 95% Coverage		0.541				90% Percentile (z)		0.342
66				95% UPL (t)		0.452				95% Percentile (z)		0.445
67				95% USL		1.41				99% Percentile (z)		0.731
68												
69	**Nonparametric Distribution Free Background Statistics**											
70	**Data do not follow a Discernible Distribution (0.05)**											
71												
72	**Nonparametric Upper Limits for Background Threshold Values**											
73				Order of Statistic, r		104				95% UTL with 95% Coverage		1
74				Approx, f used to compute achieved CC		1.825				Approximate Actual Confidence Coefficient achieved by UTL		0.904
75										Approximate Sample Size needed to achieve specified CC		124
76				95% Percentile Bootstrap UTL with 95% Coverage		1				95% BCA Bootstrap UTL with 95% Coverage		1
77				95% UPL		1				90% Percentile		0.296
78				90% Chebyshev UPL		1.077				95% Percentile		1
79				95% Chebyshev UPL		1.474				99% Percentile		1
80				95% USL		2.04						
81												
82	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
83	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
84	and consists of observations collected from clean unimpacted locations.											
85	The use of USL tends to provide a balance between false positives and false negatives provided the data											
86	represents a background data set and when many onsite observations need to be compared with the BTV.											
87												
88	**Radium-228|T**											
89												
90	**General Statistics**											
91				Total Number of Observations		106				Number of Distinct Observations		81
92				Minimum		0.263				First Quartile		0.346
93				Second Largest		1.23				Median		0.416
94				Maximum		1.3				Third Quartile		0.708
95				Mean		0.548				SD		0.278
96				Coefficient of Variation		0.507				Skewness		1.016
97				Mean of logged Data		-0.713				SD of logged Data		0.457
98												

	A	B	C	D	E	F	G	H	I	J	K	L
99	**Critical Values for Background Threshold Values (BTVs)**											
100					Tolerance Factor K (For UTL)	1.915				d2max (for USL)		3.229
101												
102	**Normal GOF Test**											
103					Shapiro Wilk Test Statistic	0.793	**Normal GOF Test**					
104					5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level					
105					Lilliefors Test Statistic	0.227	**Lilliefors GOF Test**					
106					5% Lilliefors Critical Value	0.0863	Data Not Normal at 5% Significance Level					
107	**Data Not Normal at 5% Significance Level**											
108												
109	**Background Statistics Assuming Normal Distribution**											
110				95% UTL with	95% Coverage	1.079				90% Percentile (z)		0.904
111					95% UPL (t)	1.011				95% Percentile (z)		1.004
112					95% USL	1.444				99% Percentile (z)		1.194
113												
114	**Gamma GOF Test**											
115					A-D Test Statistic	6.161	**Anderson-Darling Gamma GOF Test**					
116					5% A-D Critical Value	0.755	Data Not Gamma Distributed at 5% Significance Level					
117					K-S Test Statistic	0.199	**Kolmogorov-Smirnov Gamma GOF Test**					
118					5% K-S Critical Value	0.0881	Data Not Gamma Distributed at 5% Significance Level					
119	**Data Not Gamma Distributed at 5% Significance Level**											
120												
121	**Gamma Statistics**											
122					k hat (MLE)	4.67				k star (bias corrected MLE)		4.544
123					Theta hat (MLE)	0.117				Theta star (bias corrected MLE)		0.121
124					nu hat (MLE)	990				nu star (bias corrected)		963.3
125					MLE Mean (bias corrected)	0.548				MLE Sd (bias corrected)		0.257
126												
127	**Background Statistics Assuming Gamma Distribution**											
128				95% Wilson Hilferty (WH) Approx. Gamma UPL		1.029				90% Percentile		0.892
129				95% Hawkins Wixley (HW) Approx. Gamma UPL		1.034				95% Percentile		1.027
130				95% WH Approx. Gamma UTL with	95% Coverage	1.128				99% Percentile		1.314
131				95% HW Approx. Gamma UTL with	95% Coverage	1.138						
132					95% WH USL	1.763				95% HW USL		1.835
133												
134	**Lognormal GOF Test**											
135					Shapiro Wilk Test Statistic	0.862	**Shapiro Wilk Lognormal GOF Test**					
136					5% Shapiro Wilk P Value	1.599E-14	Data Not Lognormal at 5% Significance Level					
137					Lilliefors Test Statistic	0.177	**Lilliefors Lognormal GOF Test**					
138					5% Lilliefors Critical Value	0.0863	Data Not Lognormal at 5% Significance Level					
139	**Data Not Lognormal at 5% Significance Level**											
140												
141	**Background Statistics assuming Lognormal Distribution**											
142				95% UTL with	95% Coverage	1.177				90% Percentile (z)		0.881
143					95% UPL (t)	1.051				95% Percentile (z)		1.04
144					95% USL	2.147				99% Percentile (z)		1.421
145												
146	**Nonparametric Distribution Free Background Statistics**											
147	**Data do not follow a Discernible Distribution (0.05)**											
148												
149	**Nonparametric Upper Limits for Background Threshold Values**											
150					Order of Statistic, r	104				95% UTL with	95% Coverage	1.16

	A	B	C	D	E	F	G	H	I	J	K	L
151	Approx, f used to compute achieved CC					1.825	Approximate Actual Confidence Coefficient achieved by UTL					0.904
152							Approximate Sample Size needed to achieve specified CC					124
153	95% Percentile Bootstrap UTL with 95% Coverage					1.12	95% BCA Bootstrap UTL with 95% Coverage					0.995
154	95% UPL					1	90% Percentile					1
155	90% Chebyshev UPL					1.384	95% Percentile					1
156	95% Chebyshev UPL					1.763	99% Percentile					1.227
157	95% USL					1.3						
158												
159	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
160	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
161	and consists of observations collected from clean unimpacted locations.											
162	The use of USL tends to provide a balance between false positives and false negatives provided the data											
163	represents a background data set and when many onsite observations need to be compared with the BTV.											
164												

900	**MW-1|Thallium|T^report_result_value**										
901											
902	**General Statistics**										
903					Total Number of Observations	179			Number of Distinct Observations	3	
904					Minimum	0.2			First Quartile	0.2	
905					Second Largest	0.91			Median	0.2	
906					Maximum	0.94			Third Quartile	0.2	
907					Mean	0.208			SD	0.0764	
908					Coefficient of Variation	0.367			Skewness	9.386	
909					Mean of logged Data	-1.592			SD of logged Data	0.161	
910											
911	**Critical Values for Background Threshold Values (BTVs)**										
912					Tolerance Factor K (For UTL)	1.847			d2max (for USL)	3.398	
913											
914	**Normal GOF Test**										
915					Shapiro Wilk Test Statistic	0.101			**Normal GOF Test**		
916					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level		
917					Lilliefors Test Statistic	0.531			**Lilliefors GOF Test**		
918					5% Lilliefors Critical Value	0.0666			Data Not Normal at 5% Significance Level		
919	**Data Not Normal at 5% Significance Level**										
920											
921	**Background Statistics Assuming Normal Distribution**										
922					95% UTL with 95% Coverage	0.349			90% Percentile (z)	0.306	
923					95% UPL (t)	0.335			95% Percentile (z)	0.334	
924					95% USL	0.468			99% Percentile (z)	0.386	
925											
926	**Gamma GOF Test**										
927					A-D Test Statistic	5.587E+28			**Anderson-Darling Gamma GOF Test**		
928					5% A-D Critical Value	0.751			Data Not Gamma Distributed at 5% Significance Level		
929					K-S Test Statistic	0.535			**Kolmogorov-Smirnov Gamma GOF Test**		
930					5% K-S Critical Value	0.0689			Data Not Gamma Distributed at 5% Significance Level		
931	**Data Not Gamma Distributed at 5% Significance Level**										
932											
933	**Gamma Statistics**										
934					k hat (MLE)	22.3			k star (bias corrected MLE)	21.93	
935					Theta hat (MLE)	0.00933			Theta star (bias corrected MLE)	0.00949	
936					nu hat (MLE)	7982			nu star (bias corrected)	7849	
937					MLE Mean (bias corrected)	0.208			MLE Sd (bias corrected)	0.0444	
938											
939	**Background Statistics Assuming Gamma Distribution**										
940					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.284			90% Percentile	0.267	
941					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.279			95% Percentile	0.286	
942					95% WH Approx. Gamma UTL with 95% Coverage	0.294			99% Percentile	0.325	
943					95% HW Approx. Gamma UTL with 95% Coverage	0.289					
944					95% WH USL	0.387			95% HW USL	0.378	
945											
946	**Lognormal GOF Test**										
947					Shapiro Wilk Test Statistic	0.101			**Shapiro Wilk Lognormal GOF Test**		
948					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level		
949					Lilliefors Test Statistic	0.531			**Lilliefors Lognormal GOF Test**		
950					5% Lilliefors Critical Value	0.0666			Data Not Lognormal at 5% Significance Level		
951	**Data Not Lognormal at 5% Significance Level**										
952											

953	**Background Statistics assuming Lognormal Distribution**											
954				95% UTL with	95% Coverage	0.274				90% Percentile (z)		0.25
955					95% UPL (t)	0.266				95% Percentile (z)		0.265
956					95% USL	0.352				99% Percentile (z)		0.296
957												
958	**Nonparametric Distribution Free Background Statistics**											
959	**Data do not follow a Discernible Distribution (0.05)**											
960												
961	**Nonparametric Upper Limits for Background Threshold Values**											
962					Order of Statistic, r	174				95% UTL with	95% Coverage	0.2
963					Approx, f used to compute achieved CC	1.526				Approximate Actual Confidence Coefficient achieved by UTL		0.887
964										Approximate Sample Size needed to achieve specified CC		208
965				95% Percentile Bootstrap UTL with	95% Coverage	N/A				95% BCA Bootstrap UTL with	95% Coverage	N/A
966					95% UPL	0.2				90% Percentile		0.2
967					90% Chebyshev UPL	0.438				95% Percentile		0.2
968					95% Chebyshev UPL	0.542				99% Percentile		0.356
969					95% USL	0.94						
970												
971	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
972	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
973	and consists of observations collected from clean unimpacted locations.											
974	The use of USL tends to provide a balance between false positives and false negatives provided the data											
975	represents a background data set and when many onsite observations need to be compared with the BTV.											
976												


Box Plot for |pH|T^report_result_value
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
7.40
7.30
|pH|T^report_result_value
|pH|T^report_result_value