



# 2019 Annual Groundwater Monitoring and Corrective Action Report

*Scrubber Pond and Temporary Storage Area*

*Lewis & Clark Station*

*Sidney, Montana*

Prepared for  
Montana Dakota Utilities

January 2020

2019 Annual Groundwater Monitoring and Corrective Action Report

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## Acronyms

<b>Acronym</b>	<b>Description</b>
ACM	Assessment of Corrective Measure
ASD	Alternative Source Demonstration
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FGD	Flue-Gas Desulfurization
GWPS	Groundwater Protection Standard
MDU	Montana Dakota Utilities Company
RL	Reporting Limit
RSL	Regional Screening Level
SSI	Statistically Significant Increase
TSP	Temporary Storage Pad

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## 1.0 Introduction

Montana-Dakota Utilities Co. (MDU) owns and operates Lewis & Clark Station, a coal-fired electricity generation unit near Sidney, Montana (Figure 1). Lewis & Clark Station is a coal-fired electrical generating plant, operation of which results in coal combustion residuals (CCR) as a by-product. Two storage ponds and a CCR pile are situated at the property to manage CCR. The storage ponds—which comprise a single, multi-unit CCR surface impoundment under the CCR rule—are named the East and West Scrubber Ponds, or collectively the Scrubber Ponds.

The Scrubber Ponds store sluiced flue-gas desulfurization (FGD) solids. The CCR pile is located on a Temporary Storage Pad (TSP) where FGD solids (excavated from the Scrubber Ponds) are stored and allowed to drain prior to loading and hauling for disposal. The Scrubber Ponds are required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261 Disposal of Coal Combustion Residuals from Electric Utilities). Monitoring and reporting requirements in the CCR Rule do not apply to the current TSP because it qualifies for the CCR pile exemptions in the CCR Rule. The former TSP, which was located in the same location as the current TSP, is closed except for demonstrating that groundwater quality requirements are met.

Closure by removal of CCR began at the TSP in 2018 with the removal of CCR and CCR-contaminated sediments. Although physical removal actions have been completed, demonstration that groundwater meets the quality requirements of §257.102(c) is ongoing.

The locations of the Scrubber Ponds and TSP are shown on Figure 1. The groundwater monitoring system is a multi-unit groundwater monitoring system, as allowed in §257.91(d), meaning that both the Scrubber Ponds and the TSP are monitored by the groundwater monitoring system. This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Scrubber Ponds and TSP at MDU's Lewis & Clark Station.

### 1.1 Purpose

As stated in Section §257.90(e), the purpose of the Annual Report is to:

- Document the status of monitoring and corrective action program for the CCR unit
- Summarize key actions completed
- Describe any problems encountered
- Discuss actions to resolve the problems
- Project key activities for the upcoming year

### 1.2 Status of the Groundwater Monitoring and Corrective Action Program

The Scrubber Ponds and TSP are currently in assessment monitoring. Baseline groundwater monitoring was completed in 2017, as documented in the 2017 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area (Barr, 2018a). A detection monitoring program

began on October 17, 2017, and continued until April 14, 2018 (Barr, 2019b). A statistically significant increase (SSI) over background levels was determined for one or more of the constituents listed in appendix III to the CCR Rule (§257.95(a)) in 2018, which resulted in initiation of the assessment monitoring program on April 15, 2018, and which continued through 2019.

It was determined on January 2, 2019, that the initial assessment monitoring and resample events resulted in detections of lithium and selenium at statistically significant levels above applicable groundwater protection standards (GWPS). An assessment of corrective measures (ACM) was initiated on April 2, 2019, and completed on August 29, 2019 (Barr, 2019c). The Scrubber Ponds and TSP are currently in selection of remedy, as described in §257.97, subject to the ongoing evaluation of a potential alternative source.

### 1.3 CCR Rule Requirements

This Annual Report has been prepared in accordance with the requirements of §257.90(e) of the CCR Rule, as outlined in the following Table 1.

**Table 1 CCR Rule Requirements**

CCR Rule Reference	Content Required in Report	Location
§257.90(e)(1)	Map showing the CCR unit and all monitoring wells that are part of the groundwater monitoring system	Section 2.1.1 Documentation; see Figure 1
§257.90(e)(2)	Discuss any new or decommissioned monitoring wells	Section 2.1.2 Changes to Monitoring System
§257.90(e)(3)	Provide the number and date groundwater samples were collected, and the monitoring data (i.e., detection or assessment)	Section 2.2 Monitoring and Analytical Results
§257.90(e)(4)	Discuss any transition between monitoring programs	Not applicable in 2019
§257.90(e)(5)	Other information specified in §257.90 through §257.98	See §257.95(d)(3) and §257.95(a) in this Table
§257.95(d)(3)	Assessment monitoring concentrations, background concentrations, and groundwater protection standards	Section 2.3 Establishment of Groundwater Protection Standards, Table 2, and Appendix A
§257.95(a)	Demonstration of additional time required for completion of assessment of corrective measures	Appendix B

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## 2.0 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR units for 2019. The groundwater monitoring system is described in Section 2.1, monitoring and analytical results are described in Section 2.2, the corrective action program status is described in Section 2.4, key actions completed and problems encountered are described in Section 2.4, and key activities planned for 2020 are described in Section 2.6.

### 2.1 Groundwater Monitoring System

#### 2.1.1 Documentation

Figure 1 shows an aerial image of the CCR units and all upgradient (or background) and downgradient monitoring wells in the groundwater monitoring system, including well identification numbers, that are part of the groundwater monitoring program, as required by §257.90(e)(1). Further details on the groundwater monitoring system are included in Groundwater Monitoring System Certification, Lewis & Clark Station (Barr, 2018b).

#### 2.1.2 Changes to Monitoring System

There were no changes to the monitoring system in 2019.

### 2.2 Monitoring and Analytical Results

Groundwater samples were collected and analyzed in 2019 for the constituents listed in appendices III and IV (Part 257) under the assessment monitoring program.

- A total of fourteen samples (seven monitoring wells during two sampling events) were collected from the CCR groundwater monitoring system and were analyzed for the constituents listed in appendices III and IV during the assessment monitoring sampling events (March 4-5 and August 26-28, 2019) consistent with the requirements of §257.95(b) and §257.95(d)(1).
- Lithium was detected at statistically significant levels above the GWPS for both spring and fall monitoring events.
- Selenium was detected at statistically significant levels above the GWPS for the spring monitoring event at one well (MW-111). Selenium was below the GWPS in all wells for the fall monitoring event.

Sampling dates are reported on the field data sheets and analytical laboratory reports in Appendix A.

### 2.3 Establishment of Groundwater Protection Standards

In compliance with CCR Rule §257.95(d)(2), GWPS were established for all appendix IV constituents detected in groundwater. GWPS are defined as the highest of the following values: the applicable MCL; in the case of cobalt, lead, lithium and molybdenum, the default GWPS values established under the CCR

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Rule; or, for any constituent, a site-specific background concentration established from baseline sampling. Background levels of lithium and selenium at the site are demonstrated to be higher than the default GWPS. Thus, site-specific GWPS have been adopted for lithium and selenium in accordance with §257.95(h)(3).

Background concentration levels were determined in accordance with the statistical methods established in §257.93(f-g) and the Statistical Method Selection Certification (Barr, 2017) using the monitoring results from samples collected from upgradient monitoring wells. Samples collected during the baseline sample collection period (Barr, 2018a) were used to establish the site-specific GWPS for selenium.

The lithium groundwater monitoring results for upgradient samples (from monitoring wells MW-103, MW-110, and MW-119) collected during the baseline period defined by the CCR Rule were reported as non-detect with a reporting limit (RL) of 100 µg/L; therefore, the initial background lithium concentration level was set as the RL of 100 µg/L for lithium.

On July 30, 2018, EPA promulgated for the first time a default lithium GWPS (40 µg/L) in the agency's Phase I revision to the CCR Rule. All wells in the groundwater monitoring system (both upgradient and downgradient) were sampled and analyzed twice for lithium concentrations using a RL of 20 µg/L (lower than the default GWPS established in the CCR Rule revision) in 2018. MDU determined on January 2, 2019, that lithium and selenium were detected in downgradient wells at statistically significant levels above the GWPS, as documented in the Notification of Statistically Significant Levels Above Ground Water Protection Standards (Barr letter, January 2, 2019a).

After the Phase I CCR Rule revision was issued and before completion of the ACM, all wells in the groundwater monitoring system had been sampled and analyzed three times for lithium concentrations with the lower RL. A lithium GWPS was determined for the ACM using the upgradient lithium monitoring results from the three events that used the lower RL. A fourth monitoring event was conducted in August 2019, and MDU is currently working to complete eight sampling events for each well for lithium at the lower RL.

Table 2 provides a summary of the GWPS and background concentration levels determined in August 2019, as required by §257.95(d)(3).



**Table 2 Groundwater Protection Standards**

Parameter	Units	Groundwater Protection Standard	MCL or RSL	Background Concentration Level
Antimony	µg/L	6	6	5.7
Arsenic	µg/L	10	10	10
Barium	µg/L	2000	2000	40.2
Beryllium	µg/L	4	4	1
Cadmium	µg/L	5	5	2
Chromium	µg/L	100	100	2.3
Cobalt	µg/L	6	6	2
Fluoride	mg/L	4	4	0.87
Lead	µg/L	15	15	1
Lithium	µg/L	67.8	40	67.8
Mercury	µg/L	2	2	0.2
Molybdenum	µg/L	100	100	29.2
Selenium	µg/L	70.5	50	70.5
Thallium	µg/L	2	2	1
Radium, combined (226+228)	pCi/l	5	5	2.5

MCL: Maximum Contaminant Level, as established in 40 CFR 141.62 and 141.66.

RSL: Regional Screening Level (default GWPS), as included in the Phase I revision to 40 CFR 259.95(h) issued on July 30, 2018.

Background concentration level based on statistical methods established in 40 CFR 257.93 (f-g).

## 2.4 Corrective Action Program Status

An assessment of corrective measures (ACM, §257.95(g)(4)) was initiated on April 2, 2019.

A demonstration for a 60-day extension for preparation of the ACM, as allowed by §257.96(a), was completed on June 28, 2019, allowing for additional investigation to better understand site conditions (Appendix B). The ACM was completed on August 29, 2019 (Barr, 2019c).

Based on the results of the ACM conducted under §257.96, the owner or operator must, as soon as feasible, select a remedy that, at a minimum, meets the standards listed in §257.97 (selection of remedy). The ACM was completed on August 29, 2019. Since then, MDU has commenced work to further understand the source and site conditions to better evaluate potential remedies.

## 2.5 Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program through 2019:

- Assessment monitoring was conducted throughout 2019.
- Groundwater protection standards were established (Table 2).
- An assessment of corrective measures was completed.
- Selection of remedy started on August 30, 2019.

- 
- A new monitoring well (MW-121) was installed (September 26-27, 2019) approximately 100 feet northwest of the Yellowstone River, between MW-111 and the river. Monitoring well MW-121 was installed to further evaluate groundwater conditions near the property boundary.

No problems were encountered.

## 2.6 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2020:

- Continue the assessment monitoring program in accordance with the CCR Rule
- Evaluate analytical results from monitoring events for SSIs according to the Statistical Method Selection Certification (Barr, 2017)
- Continue selection of remedy activities under §257.97
- Prepare semiannual reports required by §257.97(a) that describe the progress in selecting and designing a remedy

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## 3.0 References

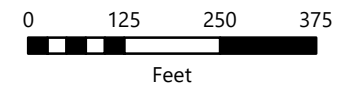
- Barr, 2019a. Letter to Montana-Dakota Utilities (Samantha Marshall) regarding Notification of Statistically Significant Levels Above Ground Water Protection Standards, January 2, 2019.
- Barr, 2019b. 2018 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area, Prepared for Montana Dakota Utilities Company. January 2019.
- Barr, 2019c. Assessment of Corrective Measures, Lewis & Clark Station. Prepared for Montana Dakota Utilities Company. August 2019.
- Barr, 2018a. 2017 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area, Prepared for Montana Dakota Utilities Company. January 2018.
- Barr, 2018b. Groundwater Monitoring System Certification, Prepared for Montana Dakota Utilities Company. November 2018.
- Barr, 2017. Statistical Method Selection Certification, Prepared for Montana Dakota Utilities Company. October 2017.

## Figures

Figure 1 Groundwater Monitoring System



- Upgradient Monitoring Well
- Downgradient Monitoring Well
- ▨ Scrubber Ponds
- ▭ Temporary Storage Pad (TSP)



GROUNDWATER  
MONITORING SYSTEM  
Lewis & Clark Station  
Annual Groundwater Monitoring  
and Corrective Action Report  
Montana-Dakota Utilities Co.



FIGURE 1

## Appendices

# Appendix A

## Laboratory Reports and Field Sheets

Appendix A Laboratory Reports and Field Sheets





**MINNESOTA VALLEY TESTING LABORATORIES, INC.**

1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724  
1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
www.mvttl.com



March 8, 2019

Montana Dakota Utilities  
Attn: Samantha Davies  
5181 Southgate Dr.  
Billings, MT 59102

RE: Groundwater Sampling Event at MDU Lewis & Clark Site

Dear Ms. Marshall:

From March 4-5, 2019, MVTL Laboratories' Field Services division collected ground water samples at the MDU Lewis & Clark Station near Sidney, MT. Samples were collected from 8 of the 9 wells. Well MW109 was not sampled because it had been removed the previous year. A duplicate sample was collected from well MW111. Samples collected were placed on ice and transported to MVTL in Bismarck, ND for analysis.

Thank you for your trust and support of our services. If you have any questions, please call me at (701) 391-4900.

Sincerely,

Jeremy Meyer  
MVTL Field Services



**MVTL Laboratories Inc.**  
FIELD DATA REPORT

**MDU Lewis and Clark**  
CCR Sampling

WO# 82-0375  
82-0373

82-0385

Attn: Samantha Davies  
5181 Southgate Dr.  
Billings, MT 59102

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WATER LEVEL START (FT)	WATER LEVEL END (FT)	VOLUME REMOVED (mL)	SAMPLE METHOD	FIELD READINGS				SAMPLE APPEARANCE OR COMMENT
									TEMP (°C)	EC	pH	Turb. NTU	
MW103	4-Mar-19	18:02	4-Mar-19	19:07	11.19	11.24	6500.0	Bladder	4.97	1424	7.13	4.69	clear
MW109	NA	NA	4-Mar-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	Well Removed
MW110	5-Mar-19	11:04	5-Mar-19	12:39	9.87	9.87	9500.0	Bladder	6.68	1064	7.11	4.49	clear
MW111	5-Mar-19	16:46	5-Mar-19	17:36	8.08	8.20	5000.0	Bladder	5.40	3485	6.99	2.18	clear
MW119	4-Mar-19	12:20	4-Mar-19	14:55	9.58	9.64	15500.0	Bladder	2.40	1210	7.07	4.72	clear
MW117	4-Mar-19	17:23	5-Mar-19	8:15	7.53	11.34	3000.0	Bladder	1.97	8576	6.27	94.40	clear
MW118	5-Mar-19	8:53	5-Mar-19	9:58	8.88	8.90	6500.0	Bladder	4.35	1580	7.20	4.90	clear
MW120	4-Mar-19	16:00	5-Mar-19	7:05	15.97	top of pump	5000.0	Bladder	5.27	3949	6.62	19.00	slightly turbid
MW116	5-Mar-19	14:15	5-Mar-19	15:55	15.08	15.11	10000.0	Bladder	7.55	3087	7.09	10.90	clear

NR= Not Recorded on Field Sheet NA = Not Applicable

# MVTL Calibration Worksheet

Site: MDU Lewis and Clark

Technician: Dawn N. Swaney

Instrument  
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration						
Date: <u>4 March 19</u>		Time: <u>0705</u>				
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	<u>15.18</u>	<u>6.96</u>	<u>7.00</u>	6.95-7.05	<u>-39.4</u>	0 +/- 50
Buffer 10	<u>15.06</u>	<u>10.06</u>	<u>10.00</u>	9.95-10.05	<u>-28.3</u>	-180 +/- 50
Buffer 4	<u>14.85</u>	<u>4.01</u>	<u>4.00</u>	4.95-5.05	<u>138.7</u>	180 +/- 50
Conductivity						Check
Buffer 1413	<u>14.88</u>	<u>1429</u>	<u>1413</u>	±10%	Buffer 5000	<u>5019</u>
ORP						
231 mV @ 25C	<u>5.05</u>	<u>241.1</u>	<u>231.6</u>	±10 mV		
DO						Barometric Pressure (mm Hg)
	<u>14.86</u>	<u>8.76</u>	<u>9.57</u>	mg/L	<u>720.6</u>	

Pre Site Calibration						
Date: <u>5 March 19</u>		Time: <u>0623</u>				
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	<u>21.10</u>	<u>7.06</u>	<u>7.00</u>	6.95-7.05	<u>-43.4</u>	0 +/- 50
Buffer 10	<u>19.04</u>	<u>9.93</u>	<u>9.98</u>	9.95-10.05	<u>-217.3</u>	-180 +/- 50
Buffer 4	<u>19.07</u>	<u>3.98</u>	<u>4.00</u>	4.95-5.05	<u>131.8</u>	180 +/- 50
Conductivity						Check
Buffer 1413	<u>18.94</u>	<u>1393</u>	<u>1413</u>	±10%	Buffer 5000	<u>4984</u>
ORP						
231 mV @ 25C	<u>8.16</u>	<u>220.1</u>	<u>231.7</u>	±10 mV		
DO						Barometric Pressure (mm Hg)
	<u>20.48</u>	<u>8.98</u>	<u>8.40</u>	mg/L	<u>716.0</u>	

Post Site Check		
Time: <u>0800</u>		
pH	Temp °C	Reading
Buffer 7	<u>13.03</u>	<u>7.00</u>
Conductivity		
Buffer 5000	<u>1341</u>	<u>4998</u>

Post Site Check		
Time: <u>0915</u>		
pH	Temp °C	Reading
Buffer 7	<u>19.72</u>	<u>6.95</u>
Conductivity		
Buffer 5000	<u>1073</u>	<u>5023</u>



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 103  
Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 4 °F Wind: west @ 30 Precip: Sunny / Partly Cloudy (Cloudy)

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>11.19</u> ft		
Depth to Top of Pump:	<u>18.47</u> ft		
Water Level After Sample:	<u>11.24</u> ft		
Measurement Method:	<u>Electric Water Level Indicator</u>		

### Sampling Information

Purging Method:	<u>Bladder</u>			
Sampling Method:	<u>Bladder</u>			
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Duplicate Sample ID:	<u>1</u>			
Purge Date:	<u>4 Mar 19</u>	Time Purging Began:	<u>1802</u> am/pm	
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	
Sample Date:	<u>4 Mar 19</u>	Time of Sampling:	<u>1907</u> am/pm	
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric			

Control Settings	
Purge:	<u>3</u> sec.
Recover:	<u>27</u> sec.
PSI:	<u>-</u>

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.	
SEQ #	Time									Clear, Slightly Turbid, Turbid	
1	<u>1807</u>	<u>5.29</u>	<u>2269</u>	<u>7.13</u>	<u>0.93</u>	<u>-249.3</u>	<u>92.0</u>	<u>11.14</u>	<u>100</u>	<u>500</u>	<u>Slightly turbid</u>
2	<u>1837</u>	<u>5.169</u>	<u>2143</u>	<u>7.12</u>	<u>0.23</u>	<u>-306.0</u>	<u>14.0</u>	<u>11.23</u>	<u>100</u>	<u>7000</u>	<u>clear</u>
3	<u>1857</u>	<u>5.19</u>	<u>1429</u>	<u>7.13</u>	<u>0.24</u>	<u>-318.8</u>	<u>5.07</u>	<u>11.28</u>	<u>100</u>	<u>2000</u>	<u>clear</u>
4	<u>1902</u>	<u>4.99</u>	<u>1428</u>	<u>7.13</u>	<u>0.24</u>	<u>-320.5</u>	<u>4.91</u>	<u>11.29</u>	<u>100</u>	<u>500</u>	<u>clear</u>
5	<u>1907</u>	<u>4.907</u>	<u>1424</u>	<u>7.13</u>	<u>0.23</u>	<u>-316.3</u>	<u>4.69</u>	<u>11.29</u>	<u>100</u>	<u>500</u>	<u>clear</u>
6											
7											
8											
9											
10											

Stabilized:  Yes  No

Total Volume Removed: 6500 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 109  
Sampling Personal: Darren Mesnager

Weather Conditions: Temp: °F Wind: @ Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	ft		
Depth to Top of Pump:	ft		
Water Level After Sample:	ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes	No		
Duplicate Sample?:	Yes	No		
Duplicate Sample ID:				
Control Settings				
Purge:			sec.	
Recover:			sec.	
PSI:				
Purge Date:	4/19/19		Time Purging Began:	am/pm
Well Purged Dry?:	Yes	No	Time Purged Dry:	am/pm
Sample Date:			Time of Sampling:	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric			

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
SEQ #	Time									
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: \_\_\_\_\_ mL

Comments:

*Well is removed*



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: MW110  
Sampling Personal: Parren Nieswag

Weather Conditions: Temp: 18 °F Wind: west @ 20 Precip: Sunny (Partly Cloudy) / Cloudy

### Well Information

Well Locked?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Well Labeled?	<input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	<input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:	<u>        </u>		
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>9.87</u>	ft	
Depth to Top of Pump:	<u>        </u>	ft	
Water Level After Sample:	<u>9.87</u>	ft	
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Duplicate Sample ID:	<u>        </u>		
Purge Date:	<u>5 Mar 19</u>	Time Purging Began:	<u>1104</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample Date:	<u>5 Mar 19</u>	Time Purged Dry:	<u>        </u> am/pm
		Time of Sampling:	<u>1239</u> am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4 - 1L Nitric + Additional Constituents		

*lin. bladder pump*

Control Settings	
Purge:	<u>3</u> sec.
Recover:	<u>17</u> sec.
PSI:	

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid	
1	<u>1109</u>	<u>5.307</u>	<u>1066</u>	<u>7.107</u>	<u>6.22</u>	<u>-179.8</u>	<u>72.2</u>	<u>9.86</u>	<u>100</u>	<u>500</u>	<u>slightly turbid</u>
2	<u>1139</u>	<u>6.98</u>	<u>1065</u>	<u>7.12</u>	<u>6.23</u>	<u>-187.4</u>	<u>13.4</u>	<u>9.90</u>	<u>100</u>	<u>3000</u>	<u>clear</u>
3	<u>1204</u>	<u>6.96</u>	<u>1066</u>	<u>7.12</u>	<u>7.00</u>	<u>-183.3</u>	<u>8.47</u>	<u>9.87</u>	<u>100</u>	<u>2500</u>	<u>clear</u>
4	<u>1209</u>	<u>6.84</u>	<u>1065</u>	<u>7.11</u>	<u>4.39</u>	<u>-175.6</u>	<u>5.62</u>	<u>9.87</u>	<u>100</u>	<u>1500</u>	<u>clear</u>
5	<u>1229</u>	<u>7.03</u>	<u>1065</u>	<u>7.11</u>	<u>4.32</u>	<u>-175.7</u>	<u>4.94</u>	<u>9.87</u>	<u>100</u>	<u>1000</u>	<u>clear</u>
6	<u>1234</u>	<u>6.58</u>	<u>1065</u>	<u>7.11</u>	<u>4.30</u>	<u>-174.3</u>	<u>4.83</u>	<u>9.87</u>	<u>100</u>	<u>500</u>	<u>clear</u>
7	<u>1239</u>	<u>6.68</u>	<u>1064</u>	<u>7.11</u>	<u>4.22</u>	<u>-173.6</u>	<u>4.49</u>	<u>9.87</u>	<u>100</u>	<u>500</u>	<u>clear</u>
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 9500 mL

Comments: Used a lin bladder pump on well, due to obstruction.



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 119  
Sampling Personal: Patren Nieswaag

Weather Conditions: Temp: 4 °F Wind: West @ 30 Precip: Sunny / Partly Cloudy / **Cloudy**

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>9.58</u> ft		
Depth to Top of Pump:	<u>14.11</u> ft		
Water Level After Sample:	<u>9.64</u> ft		
Measurement Method:	<u>Electric Water Level Indicator</u>		

### Sampling Information

Purging Method:	<u>Bladder</u>		
Sampling Method:	<u>Bladder</u>		
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample ID:	<u>  —  </u>		
Control Settings			
Purge:	<u>3</u>	sec.	
Recover:	<u>27</u>	sec.	
PSI:	<u>  —  </u>		
Purge Date:	<u>304 mar 19</u>	Time Purging Began:	<u>1220</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry: <u>  —  </u> am/pm
Sample Date:	<u>4 mar 19</u>	Time of Sampling:	<u>1455</u> am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4 - 1L Nitric		

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.	
SEQ #	Time									Clear, Slightly Turbid, Turbid	
1	1225	3.55	1167	6.91	2.017	-129.3	225	9.64	100	500	Turbid
2	1245	3.56	1181	7.04	1.50	-167.6	170	9.62	100	3000	Slightly Turbid
3	1315	2.02	1202	7.05	1.69	-162.9	26.8	9.68	100	3000	clear
4	1355	2.18	1202	7.05	1.73	-147.7	9.72	9.65	100	3000	clear
5	1425	2.71	1203	7.05	1.89	-151.2	8.91	9.67	100	3000	clear
6	1445	2.60	1204	7.06	1.68	-120.9	5.19	9.68	100	2000	clear
7	1450	2.71	1205	7.07	1.77	-113.3	4.98	9.68	100	500	clear
8	1455	2.40	1210	7.07	1.76	-117.3	4.72	9.65	100	500	clear
9											
10											

Stabilized: Yes No  
Comments:   —  

Total Volume Removed: 15,500 mL







# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 117  
Sampling Personal: Darra Nieswaag

Weather Conditions: Temp: °F Wind: @ Precip: ~~Sunny~~ Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes	No	Not Visible
Repairs Necessary:	-		
Casing Diameter:	2"		
Water Level Before Purge:	7.53		ft
Depth to Top of Pump:	9.86		ft
Water Level After Sample:	12.34		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	<input checked="" type="checkbox"/> No	
Duplicate Sample?:	Yes	<input checked="" type="checkbox"/> No	
Duplicate Sample ID:	-		
Purge Date:	4 Mar 19	Time Purging Began:	8:17:23 am/pm
Well Purged Dry?:	Yes	No	Time Purged Dry: 08:15 am/pm
Sample Date:	5 Mar 19	Time of Sampling:	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	24-1L Nitric <del>additional</del>		

Control Settings	
Purge:	3 sec.
Recover:	27 sec.
PSI:	-

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
1	17:28	1.23	8276	6.87	2.42	-131.0	8.36	100	500	Turbid
2	17:48	1.24	8322	6.86	4.22	-131.1	Top	100	2000	Slightly Turbid
3										
4	08:10	5 Mar 19	Purged	5 min	to clear line		9.44			
5	08:15	1.97	8576	6.99	6.27	-206.4	Top	100	500	ST
6										
7	08:15		started to purge				Top 9.86			
8										
9										
10										

Stabilized: Yes  No

Total Volume Removed: 3006 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: March 2018  
 Sample ID: 118 MW17  
 Sampling Personal: Darren Nieswaga

Weather Conditions: Temp: 57 °F Wind: SW @ 13 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<u>No</u>	
Well Labeled?	<u>Yes</u>	No	
Casing Straight?	<u>Yes</u>	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:	<u>—</u>		
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>8.88</u>	ft	
Depth to Top of Pump:	<u>9.74</u>	ft	
Water Level After Sample:	<u>8.90</u>	ft	
Measurement Method:	<u>Electric Water Level Indicator</u>		

### Sampling Information

Purging Method:	<u>Bladder</u>		
Sampling Method:	<u>Bladder</u>		
Dedicated Equip?:	Yes	<u>No</u>	
Duplicate Sample?:	<u>Yes</u>	No	
Duplicate Sample ID:	<u>—</u>		
Purge Date:	<u>5 Mar 19</u>	Time Purging Began:	<u>0853</u> am/pm
Well Purged Dry?	Yes	<u>No</u>	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>5 Mar 19</u>	Time of Sampling:	<u>0958</u> am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4 - 1L Nitric <del>Additional Constituents</del>		

Control Settings	
Purge:	<u>3</u> sec.
Recover:	<u>2.7</u> sec.
PSI:	<u>—</u>

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description:
											Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
1	<u>0858</u>	<u>3.76</u>	<u>1559</u>	<u>7.21</u>	<u>3.61</u>	<u>-228.1</u>	<u>2.04</u>	<u>8.91</u>	<u>100</u>	<u>500</u>	<u>Turbid</u>
2	<u>0928</u>	<u>3.60</u>	<u>1574</u>	<u>7.19</u>	<u>2.61</u>	<u>-229.0</u>	<u>9.22</u>	<u>8.89</u>	<u>100</u>	<u>3000</u>	<u>Clear</u>
3	<u>0943</u>	<u>4.28</u>	<u>1578</u>	<u>7.19</u>	<u>2.48</u>	<u>-227.3</u>	<u>5.24</u>	<u>8.92</u>	<u>100</u>	<u>1500</u>	<u>Clear</u>
4	<u>0948</u>	<u>4.09</u>	<u>1579</u>	<u>7.19</u>	<u>2.47</u>	<u>-228.0</u>	<u>5.20</u>	<u>8.91</u>	<u>100</u>	<u>500</u>	<u>Clear</u>
5	<u>0953</u>	<u>4.22</u>	<u>1580</u>	<u>7.20</u>	<u>2.63</u>	<u>-215.1</u>	<u>5.32</u>	<u>8.91</u>	<u>100</u>	<u>500</u>	<u>Clear</u>
6	<u>0958</u>	<u>4.35</u>	<u>1580</u>	<u>7.20</u>	<u>2.61</u>	<u>-224.9</u>	<u>4.90</u>	<u>8.91</u>	<u>100</u>	<u>500</u>	<u>Clear</u>
7											
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 6500 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 120  
Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 7 °F Wind: West @ 107 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	Yes	No	<u>(Not Visible)</u>
Repairs Necessary:	<u>-</u>		
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>15.97</u>	ft	
Depth to Top of Pump:	<u>16.81</u>	ft	
Water Level After Sample:	<u>TOP of pump</u>	ft	
Measurement Method:	<u>Electric Water Level Indicator</u>		

### Sampling Information

Purging Method:	<u>Bladder</u>		
Sampling Method:	<u>Bladder</u>		
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	No	<u>Tubing</u>
Duplicate Sample?:	Yes	<input checked="" type="checkbox"/> No	
Duplicate Sample ID:	<u>-</u>		
Purge Date:	<u>4 Mar 19</u>	Time Purging Began:	<u>1600</u> am/pm
Well Purged Dry?:	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Time Purged Dry: <u>1645</u> am/pm
Sample Date:	<u>4 Mar 19</u>	Time of Sampling:	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	<u>484- 1L Nitric</u>		

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.	
											Clear, Slightly Turbid, Turbid	
1	1605	1.03	3641	6.59	1.30	-212.1	14.5	16.16	100	500	Clear	
2	1620	3.63	3568	6.63	2.91	-264.5	6.62	16.81	100	1500	Clear	
3	1635	1.20	3676	6.60	1.19	-259.7	4.68	16.81	100	1500	Clear	
4	1640	1.23	3636	6.59	1.20	-247.3	4.44	16.81	100	500	Clear	
5	1645	1.24	3575	6.61	1.28	-251.4	50.1	16.81	100	500	Clear	
6												
7	0700	Purged and live for 5 min.							16.03			
8	0705	5.217	3949	6.62	3.12	-255.7	190		100	500	Clear slightly turbid	
9												
10												

Stabilized: Yes  No

Comments:

Total Volume Removed: 5000 mL



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201982-0373
Client: Montana Dakota Utilities
Location: MDU Lewis & Clark
Project Identification: March 2019
MVTL Laboratory Identifications: 19-W307 through 19-W315
Page 1 of 1

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Dup 1, Field Blank (FB), MW103, MW109, MW110, MW119, MW111, MW117, MW118, MW120.

I. RECEIPT

- All samples were received at the laboratory on 6 Mar 2019 at 1327.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 1.1°C.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

- All holding times were met for both preparation and analysis unless noted on the individual analytical laboratory report.

III. METHODS

- Approved methodology was followed for all sample analyses.

IV. ANALYSIS

- All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted on the individual analytical laboratory report.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 26 Mar 19
Claudette Carroll - MVTL Bismarck Laboratory Manager

**Quality Control Report**

Lab IDs: 19-W307 to 19-W315

Project: MDU Lewis & Clark

Work Order: 201982-0373

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.001	0.1010	101	75-125	0.1010	0.1010	101	0.0	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	90	80-120	0.400 0.400 0.400	19W297q 19W308q 19-W326	< 0.001 < 0.001 < 0.004	0.4312 0.3956 0.3856	108 99 96	75-125 75-125 75-125	0.4312 0.3956 0.3856	0.4044 0.3902 0.3788	101 98 95	6.4 1.4 1.8	20 20 20	- - -	- - -	< 0.001
Arsenic - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.002	0.1069	107	75-125	0.1069	0.1008	101	5.9	20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	83	80-120	0.400 0.400	19W297q 19W308q	< 0.002 < 0.002	0.4206 0.3966	105 99	75-125 75-125	0.4206 0.3966	0.4122 0.3936	103 98	2.0 0.8	20 20	- -	- -	< 0.002
Barium - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	0.0235	0.1174	94	75-125	0.1174	0.1142	91	2.8	20	-	-	< 0.002
Barium - Total mg/l	0.1000	96	80-120	0.400 0.400	19W297q 19W308q	0.1052 < 0.002	0.5150 0.3860	102 96	75-125 75-125	0.5150 0.3860	0.4892 0.3774	96 94	5.1 2.3	20 20	- -	- -	< 0.002
Beryllium - Dissolved mg/l	0.0200	94	80-120	0.100	19W315q	< 0.0005	0.1140	114	75-125	0.1140	0.1089	109	4.6	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	92	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005	0.4420 0.4266	110 107	75-125 75-125	0.4420 0.4266	0.4186 0.4100	105 102	5.4 4.0	20 20	- -	- -	< 0.0005
Boron - Dissolved mg/l	0.40 0.40	102 102	80-120 80-120	0.400 0.400	19-W285 19-W314	0.38 1.48	0.80 1.80	105 80	75-125 75-125	0.80 1.80	0.75 1.83	92 88	6.5 1.7	20 20	- -	- -	< 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	102 102	80-120 80-120	0.400 0.400	19-D496 19-W308	0.37 < 0.1	0.74 0.42	92 105	75-125 75-125	0.74 0.42	0.75 0.42	95 105	1.3 0.0	20 20	- -	- -	< 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.0005	0.0944	94	75-125	0.0944	0.0948	95	0.4	20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000	96	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005	0.4144 0.4102	104 103	75-125 75-125	0.4144 0.4102	0.4068 0.4070	102 102	1.9 0.8	20 20	- -	- -	< 0.0005
Calcium - Dissolved mg/l	20.0	113	80-120	100	19W310q	89.4	180	91	75-125	180	181	92	0.6	20	-	-	< 1
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	100 100 100	19M385q 19W296q 19W310q	58.8 < 1 88.7	156 94.2 180	97 94 91	75-125 75-125 75-125	156 94.2 180	156 94.4 180	97 94 91	0.0 0.2 0.0	20 20 20	- - -	- - -	< 1 < 1 < 1 < 1



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724  
 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
 www.mvttl.com

MEMBER  
ACIL

## Quality Control Report

Lab IDs: 19-W307 to 19-W315

Project: MDU Lewis & Clark

Work Order: 201982-0373

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Chloride mg/l	30.0	98	80-120	30.0	19-D513	50.9	80.6	99	80-120	80.6	81.8	103	1.5	20	-	-	< 1
	30.0	97	80-120	30.0	19-W343	5.8	34.9	97	80-120	34.9	35.6	99	2.0	20	-	-	< 1
Chromium - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	< 0.002	0.1045	104	75-125	0.1045	0.1006	101	3.8	20	-	-	< 0.002
Chromium - Total mg/l	0.1000	86	80-120	0.400	19W297q	< 0.002	0.4134	103	75-125	0.4134	0.4006	100	3.1	20	-	-	< 0.002
				0.400	19W308q	< 0.002	0.3998	100	75-125	0.3998	0.3888	97	2.8	20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	< 0.002	0.1039	104	75-125	0.1039	0.1003	100	3.5	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	86	80-120	0.400	19W297q	< 0.002	0.4126	103	75-125	0.4126	0.3944	99	4.5	20	-	-	< 0.002
				0.400	19W308q	< 0.002	0.4020	100	75-125	0.4020	0.3900	98	3.0	20	-	-	< 0.002
Fluoride mg/l	0.50	104	90-110	0.500	19-W308	< 0.1	0.54	108	80-120	0.54	0.54	108	0.0	20	-	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	< 0.0005	0.0878	88	75-125	0.0878	0.0862	86	1.8	20	-	-	< 0.0005
Lead - Total mg/l	0.1000	94	80-120	0.400	19W297q	< 0.0005	0.4160	104	75-125	0.4160	0.3916	98	6.0	20	-	-	< 0.0005
				0.400	19W308q	< 0.0005	0.3946	99	75-125	0.3946	0.3976	99	0.8	20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.400	105	80-120	0.400	19-W310	0.034	0.395	90	75-125	0.395	0.401	92	1.5	20	-	-	< 0.02
Lithium - Total mg/l	0.400	105	80-120	0.400	19-W308	< 0.02	0.407	102	75-125	0.407	0.410	102	0.7	20	-	-	< 0.02 < 0.02
Magnesium - Dissolved mg/l	20.0	108	80-120	100	19W310q	53.4	150	97	75-125	150	151	98	0.7	20	-	-	< 1
Magnesium - Total mg/l	20.0	108	80-120	100	19M385q	< 1	99.3	99	75-125	99.3	99.5	100	0.2	20	-	-	< 1
	20.0	108	80-120	100	19W296q	< 1	90.8	91	75-125	90.8	91.3	91	0.5	20	-	-	< 1
				100	19W310q	53.8	149	95	75-125	149	152	98	2.0	20	-	-	< 1 < 1
Mercury - Dissolved mg/l	0.0020	95	85-115	0.002	19-W315	< 0.0002	0.0016	80	70-130	0.0016	0.0016	80	0.0	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	100	85-115	0.002	A8962	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	< 0.0002
	0.0020	95	85-115	0.002	19-W312	< 0.0002	0.0016	80	70-130	0.0016	0.0015	75	6.5	20	-	-	< 0.0002
				0.002	19-W315	< 0.0002	0.0016	80	70-130	0.0016	0.0016	80	0.0	20	-	-	< 0.0002
Molybdenum - Dissolved mg/l	0.0200	94	80-120	0.100	19W315q	0.0035	0.1018	98	75-125	0.1018	0.1022	99	0.4	20	-	-	< 0.002

**Quality Control Report**

Lab IDs: 19-W307 to 19-W315

Project: MDU Lewis & Clark

Work Order: 201982-0373

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Molybdenum - Total mg/l	0.1000	95	80-120	0.400 0.400	19W297q 19W308q	< 0.002 < 0.002	0.4006 0.3884	100 97	75-125 75-125	0.4006 0.3884	0.3920 0.3822	98 96	2.2 1.6	20 20	- -	- -	< 0.002
Nitrate-Nitrite as N mg/l	0.50 0.50	108 106	90-110 90-110	1.00 1.00	19-W296 19-W329	< 0.1 < 0.1	1.10 1.02	110 102	90-110 90-110	1.10 1.02	1.09 1.02	109 102	0.9 0.0	20 20	- -	- -	< 0.1 < 0.1
pH units	- -	- -	- -	- -	- -	- -	- -	- -	- -	7.8 7.6	7.7 7.7	- -	1.3 1.3	20 20	- -	- -	- -
Potassium - Dissolved mg/l	10.0	105	80-120	20.0	19W310q	6.2	25.7	98	75-125	25.7	26.0	99	1.2	20	-	-	< 1
Potassium - Total mg/l	10.0 10.0	104 104	80-120 80-120	20.0 20.0 20.0	19M385q 19W296q 19W310q	7.4 < 1 6.2	27.4 18.4 25.4	100 92 96	75-125 75-125 75-125	27.4 18.4 25.4	27.0 18.6 27.3	98 93 106	1.5 1.1 7.2	20 20 20	- - -	- - -	< 1 < 1 < 1 < 1
Selenium - Dissolved mg/l	0.0200	94	80-120	0.100	19W315q	< 0.005	0.1076	108	75-125	0.1076	0.0998	100	7.5	20	-	-	< 0.005
Selenium - Total mg/l	0.1000	90	80-120	0.400 0.400	19W297q 19W308q	0.0107 < 0.005	0.4398 0.3942	107 99	75-125 75-125	0.4398 0.3942	0.4406 0.3984	107 100	0.2 1.1	20 20	- -	- -	< 0.005
Sodium - Dissolved mg/l	20.0	108	80-120	100	19W310q	80.2	175	95	75-125	175	177	97	1.1	20	-	-	< 1
Sodium - Total mg/l	20.0 20.0	110 106	80-120 80-120	100 100 100	19M385q 19W296q 19W310q	220 116 81.1	300 201 174	80 85 93	75-125 75-125 75-125	300 201 174	300 201 176	80 85 95	0.0 0.0 1.1	20 20 20	- - -	- - -	< 1 < 1 < 1 < 1
Sulfate mg/l	100 100	103 100	80-120 80-120	500 500	19-D504 19-W314	368 512	823 949	91 87	80-120 80-120	823 949	806 959	88 89	2.1 1.0	20 20	- -	- -	< 5 < 5
Thallium - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	< 0.0005	0.0900	90	75-125	0.0900	0.0875	88	2.8	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	95	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005	0.4158 0.3962	104 99	75-125 75-125	0.4158 0.3962	0.3946 0.4010	99 100	5.2 1.2	20 20	- -	- -	< 0.0005
Total Alkalinity mg/l CaCO3	410	98	90-110	410 410	19-D504 19-W307	550 437	947 821	97 94	80-120 80-120	947 821	951 828	98 95	0.4 0.8	20 20	97	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	35300	35500	-	0.6	20	-	-	< 10

**Quality Control Report**

Lab IDs: 19-W307 to 19-W315

Project: MDU Lewis & Clark

Work Order: 201982-0373

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	90	90	-	0.0	20	-	-	< 2
	-	-	-	-	-	-	-	-	-	81	67	-	18.9	20	-	-	

Approved by: C. Cantor  
 26 Mar 19





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Page: 1 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W307  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
Total Alkalinity	437	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Fluoride	2.01	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	1790	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
Chloride	37.7	mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	12.4	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	3250	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	164	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Magnesium - Total	487	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Sodium - Total	128	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Potassium - Total	9.2	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Lithium - Total	0.173	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	6.90	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	157	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	474	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	121	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	9.1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.162	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	6.60	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0202	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0556	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0760	mg/l	0.0050	6020B	8 Mar 19 13:19	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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1201 Lincoln Hwy ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
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Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 13 Mar 19  
Lab Number: 19-W307  
Work Order #: 82-0373  
Account #: 002800  
Date Sampled: 5 Mar 19  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0178 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0522 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0748 mg/l		0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

*CC*  
Claudette K. Carroll 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
: = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W308  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 6.4	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	< 0.1	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	< 10	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Magnesium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Sodium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Potassium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Lithium - Total	< 0.02	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	< 0.02	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	< 0.005	mg/l	0.0050	6020B	8 Mar 19 13:19	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC

RL = Method Reporting Limit

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@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W308  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	< 0.002 mg/l		0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	< 0.005 mg/l		0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

*C*  
 Claudette K. Carroll 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W309  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 4 Mar 19 19:07  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVT L Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW103

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
pH - Field	7.13	units	NA	SM 4500 H+ B	4 Mar 19 19:07	DJN
Temperature - Field	4.97	Degrees C	NA	SM 2550B	4 Mar 19 19:07	DJN
Total Alkalinity	340	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1424	umhos/cm	1	EPA 120.1	4 Mar 19 19:07	DJN
Fluoride	0.72	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	433	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
Chloride	23.0	mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	5.42	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	994	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	94.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	121	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	90.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	8.0	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.056	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	1.24	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	91.5	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	116	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	87.7	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	7.8	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.053	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	1.16	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
Antimony - Total	0.0047	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	0.0030	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0279	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	0.0027	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0234	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0450	mg/l	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 13 Mar 19  
Lab Number: 19-W309  
Work Order #: 82-0373  
Account #: 002800  
Date Sampled: 4 Mar 19 19:07  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 174105 OP

Sample Description: MW103

Temp at Receipt: 1.1C

Event and Year: March 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	0.0036	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	0.0025	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0212	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0197	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0464	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

*Claudette K. Carroll* <sup>CC</sup> 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix                      || = Due to concentration of other analytes  
! = Due to sample quantity                      + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Samantha Davies
Montana Dakota Utilities
5181 Southgate Dr
Billings MT 59102

Report Date: 13 Mar 19
Lab Number: 19-W310
Work Order #: 82-0373
Account #: 002800
Date Sampled: 5 Mar 19 12:39
Date Received: 6 Mar 19 13:27
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW110

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

Table with columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include various chemical tests like pH, Total Suspended Solids, Conductivity, etc.

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Samantha Davies
Montana Dakota Utilities
5181 Southgate Dr
Billings MT 59102

Report Date: 13 Mar 19
Lab Number: 19-W310
Work Order #: 82-0373
Account #: 002800
Date Sampled: 5 Mar 19 12:39
Date Received: 6 Mar 19 13:27
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW110

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Thallium - Total, Antimony - Dissolved, Arsenic - Dissolved, Barium - Dissolved, Beryllium - Dissolved, Cadmium - Dissolved, Chromium - Dissolved, Cobalt - Dissolved, Lead - Dissolved, Molybdenum - Dissolved, Selenium - Dissolved, Thallium - Dissolved.

\* Holding time exceeded

Approved by: Claudette K. Carroll 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
: = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

MVTL guarantees the competency of its analytical services on the samples submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all parameters affecting the sample are the same, including sampling by MVTL. As a natural protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication, dissemination, or reuse of data regarding our reports is required pending our written approval.





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Page: 1 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W311  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 4 Mar 19 14:55  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW119

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.7	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	6	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
pH - Field	7.07	units	NA	SM 4500 H+ B	4 Mar 19 14:55	DJN
Temperature - Field	2.40	Degrees C	NA	SM 2550B	4 Mar 19 14:55	DJN
Total Alkalinity	394	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1210	umhos/cm	1	EPA 120.1	4 Mar 19 14:55	DJN
Fluoride	0.42	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	191	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
Chloride	25.3	mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	9.95	mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	778	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	99.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	61.8	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	90.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	7.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.037	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	0.22	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	103	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	63.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	95.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	7.6	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.038	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	0.23	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0338	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0033	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	< 0.005	mg/l	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix   # = Due to concentration of other analytes  
 ! = Due to sample quantity   + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W311  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 4 Mar 19 14:55  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW119

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0305	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0026	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

*Claudette K Carroll* <sup>CC</sup>  
 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Samantha Davies
Montana Dakota Utilities
5181 Southgate Dr
Billings MT 59102

Report Date: 13 Mar 19
Lab Number: 19-W312
Work Order #: 82-0373
Account #: 002800
Date Sampled: 5 Mar 19 17:36
Date Received: 6 Mar 19 13:27
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW111

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

Table with columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include various chemical tests like pH, Total Suspended Solids, Calcium, Magnesium, etc.

RL = Method Reporting Limit

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@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

MVTL warrants the accuracy of the results shown on the reports submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions of the test are the same as those used by MVTL. For a limited protection in claims, the public and investors, all reports are submitted as the confidential property of clients and authorization for publishing a report or releasing information from a report without liability is required pending our written approval.



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Page: 2 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W312  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19 17:36  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: March 2019

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0176	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0528	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0773	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

*CC*  
Claudette K. Carroll 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W313  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19 8:15  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: March 2019

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			EPA 200.2	6 Mar 19	SVS
pH	* 7.5 units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	62 mg/l	2	I3765-85	6 Mar 19 15:41	SVS
pH - Field	6.99 units	NA	SM 4500 H+ B	5 Mar 19 8:15	DJN
Temperature - Field	1.97 Degrees C	NA	SM 2550B	5 Mar 19 8:15	DJN
Total Alkalinity	400 mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	8576 umhos/cm	1	EPA 120.1	5 Mar 19 8:15	DJN
Fluoride	0.21 mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	6150 mg/l	5.00	ASTM D516-07	11 Mar 19 11:36	EV
Chloride	44.7 mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	19.8 mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002 mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Mercury - Dissolved	< 0.0002 mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	9320 mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	448 mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	1340 mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	600 mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	27.2 mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.155 mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	10.5 mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	432 mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	1280 mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	590 mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	26.0 mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.130 mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	9.98 mg/l	0.10	6010D	12 Mar 19 13:27	SZ
Antimony - Total	< 0.001 mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002 mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0442 mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005 mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005 mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	0.0071 mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002 mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	0.0016 mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0038 mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0307 mg/l	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix    # = Due to concentration of other analytes  
 ! = Due to sample quantity    + = Due to internal standard response

CERTIFICATION: ND # ND-00016

MVTL, its employees and/or its analysts assume no responsibility for the results obtained from testing if it is not properly run by MVTL or if the analyst does not obtain a result on any particular sample which will be the same on any other sample unless all conditions affecting the outcome (including sampling by MVTL) are a correct procedure to follow. The name and address of all reports are submitted as the confidential property of clients, and authorization for additional use, transfer, or other dissemination of results is required pending our written approval.



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Page: 2 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W313  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19 8:15  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW117

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0140	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0028	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0296	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by: Claudette K. Carroll <sup>CC</sup> 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 13 Mar 19  
Lab Number: 19-W314  
Work Order #: 82-0373  
Account #: 002800  
Date Sampled: 5 Mar 19 9:58  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW118

PO #: 174105 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.8	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
pH - Field	7.20	units	NA	SM 4500 H+ B	5 Mar 19 9:58	DJN
Temperature - Field	4.35	Degrees C	NA	SM 2550B	5 Mar 19 9:58	DJN
Total Alkalinity	351	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1580	umhos/cm	1	EPA 120.1	5 Mar 19 9:58	DJN
Fluoride	1.15	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	512	mg/l	5.00	ASTM D516-07	11 Mar 19 11:36	EV
Chloride	23.4	mg/l	1.0	SM4500-Cl-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	5.95	mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	1160	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	78.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	155	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	82.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	6.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.074	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	1.46	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	78.8	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	155	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	81.3	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	6.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.074	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	1.48	mg/l	0.10	6010D	12 Mar 19 13:27	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0187	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0381	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0574	mg/l	0.0050	6020B	8 Mar 19 13:19	CC

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! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 2 of 2

Samantha Davies  
 Montana Dakota Utilities  
 5181 Southgate Dr  
 Billings MT 59102

Report Date: 13 Mar 19  
 Lab Number: 19-W314  
 Work Order #: 82-0373  
 Account #: 002800  
 Date Sampled: 5 Mar 19 9:58  
 Date Received: 6 Mar 19 13:27  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: March 2019

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0167	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0384	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0620	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by: Claudette K. Carroll <sup>CC</sup> 26 Mar 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016









**Laboratories, Inc.**

2616 E. Broadway  
Bismarck, ND 58501  
Phone (701) 258-9720

# Chain of Custody Record

<b>Project Name:</b> MDU Lewis and Clark	<b>Event:</b> March 2019	<b>Work Order Number:</b> 82-0373
<b>Report To:</b> MDU Attn: Samantha Davies Address: 5181 Southgate Dr. Billings, MT 59102 phone: 406-896-4227	<b>Carbon Copy:</b> Attn: Address:	<b>Name of Sampler(s):</b> Darren Nieswaag

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type				Field Parameters			Analysis Required
					1 liter	500mL Nitric	500mL Nitric (filtered)	250 mL Sulfuric	Temp (°C)	Spec. Cond.	PH	
W307	Dup 1	5 Mar 19	NA	GW	X	X	X	X	NA	NA	NA	MDU L&C 2019
W308	Field Blank (FB)	5 Mar 19	NA	GW	X	X	X	X	NA	NA	NA	
W309	MW103	4 Mar 19	1907	GW	X	X	X	X	4.97	1424	7.13	
---	MW109	4 Mar 19	---	GW	*	X	X	X	Well Removed			
W310	MW110	5 Mar 19	1239	GW	X	X	X	X	6.68	1064	7.11	
W311	MW119	4 Mar 19	1455	GW	X	X	X	X	2.40	1210	7.07	
W312	MW111	5 Mar 19	1736	GW	X	X	X	X	5.40	3485	6.99	
W313	MW117	5 Mar 19	0815	GW	X	X	X	X	1.97	8576	6.99	
W314	MW118	5 Mar 19	0958	GW	X	X	X	X	4.35	1580	7.20	
W315	MW120	5 Mar 19	0705	GW	X	X	X	X	5.27	3949	6.62	

Comments: \*4 Mar 19 @ PN

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1 <i>John Nieswaag</i>	6 Mar 19 1327	Log In Walk In #2	1.5 TM562 / TM805

Received by:	
Name:	Date/Time
<i>Tea</i>	6 Mar 2019 1327



**CASE NARRATIVE – AMENDED 14 MAY 19**

**MVTL Lab Reference No/SDG:** 201982-0375  
**Client:** Montana Dakota Utilities  
**Location:** MDU Lewis & Clark  
**Project Identification:** March 2019 (Radiochem)  
**MVTL Laboratory Identifications:** 19-W317 through 19-W325  
**Page 1 of 2**

MDU Sample Identification	MVTL Laboratory #
Dup1	19-W317
Field Blank (FB)	19-W318
MW103	19-W319
MW109	No sample
MW110	19-W320
MW119	19-W321
MW111	19-W322
MW117	19-W323
MW118	19-W324
MW120	19-W325

**I. RECEIPT**

- All samples were received at the laboratory on 6 Mar 2019 at 1327.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 1.1°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 11 Mar 19.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

**II. HOLDING TIMES**

- All holding times were met for both preparation and analysis unless noted on the individual analytical laboratory report or on the IML Case Narrative.

**III. METHODS**

- Approved methodology was followed for all sample analyses.
  - Please refer to the IML Case Narrative for more information regarding methodology.

**IV. ANALYSIS**

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted on the individual analytical laboratory report or on the IML Case Narrative.



**CASE NARRATIVE – AMENDED 14 MAY 19**

MVTL Lab Reference No/SDG: 201982-0375  
Client: Montana Dakota Utilities  
Location: MDU Lewis & Clark  
Project Identification: March 2019 (Radiochem)  
MVTL Laboratory Identifications: 19-W317 through 19-W325  
Page 2 of 2

**V. REPORTING**

- Per email dated 7 May 19 from Terri Olson with Barr, the data package was missing some QC criteria and qualifiers. The data package was amended to include this information.
  - According to IML Laboratories, although the RPD is above the limit of 20%, the RER for the sample and its duplicate is <2. In radiochemistry, an RER <2 is considered acceptable, the samples are considered within acceptable range for duplicates and no flagging is required.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 14 May 19  
Claudette Carroll - MVTL Bismarck Laboratory Manager

## Claudette Carroll

---

**From:** Terri A. Olson <TOlson@barr.com>  
**Sent:** Tuesday, May 7, 2019 9:38 PM  
**To:** Claudette Carroll; Samantha Davies (samantha.davies@mdu.com)  
**Cc:** Barr Data Management; Justin Soberaski  
**Subject:** RE: Emailing: EFWEDD\_201982-0375.zip, 201982-0375 MDU L&C RADCHEM.pdf

Hi Claudette,

Couple of items on this report:

- The Ra 226 LCS/LCSD RPD appears to be missing along with the applicable RPD criteria.
- The Ra 228 RPD is above the RPD criteria listed but is not qualified.

Please check with the lab and let us know.

Thank-you,

Terri A. Olson  
Senior Data Quality Specialist  
Minneapolis, MN office: 952.842.3578  
TOlson@barr.com  
[www.barr.com](http://www.barr.com)

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-----Original Message-----

**From:** Claudette Carroll <ccarroll@mvtl.com>  
**Sent:** Tuesday, May 7, 2019 9:35 AM  
**To:** Samantha Davies (samantha.davies@mdu.com) <samantha.davies@mdu.com>  
**Cc:** Barr Data Management <BarrDM@barr.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com>  
**Subject:** Emailing: EFWEDD\_201982-0375.zip, 201982-0375 MDU L&C RADCHEM.pdf

Hi Sam,

Please find attached the radiochem results for the sampling done at MDU Lewis & Clark. Hard copies will follow in the mail. Let me know if you have any questions.

Have a great rest of your day!

Claudette

[ccarroll@mvtl.com](mailto:ccarroll@mvtl.com)

701-258-9720

2616 E. Broadway Ave/Bismarck, ND 58501

Our mailing address changed 1 Mar 2019. Listed below is our new mailing address.

MVTL Laboratories

2616 E. Broadway

Bismarck, ND 58501

Your message is ready to be sent with the following file or link attachments:

[https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\\_201982-0375.zip&c=E,1,nQ-0P9tOAWRNP8moCmcX-dwsXykED7loqncxndoRtNFpLdyJMzJ9QDwTiyvgl3MeTkOTvc1eBrpUvzV0IGfSbhE8-GRN5HhROEyAi-Zuz-qGLISwd4NMQCqjE4s,&typo=1](https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD_201982-0375.zip&c=E,1,nQ-0P9tOAWRNP8moCmcX-dwsXykED7loqncxndoRtNFpLdyJMzJ9QDwTiyvgl3MeTkOTvc1eBrpUvzV0IGfSbhE8-GRN5HhROEyAi-Zuz-qGLISwd4NMQCqjE4s,&typo=1)

201982-0375 MDU L&C RADCHEM.pdf

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Page: 1 of 1

Samantha Davies
Montana Dakota Utilities
5181 Southgate Dr
Billings MT 59102

Report Date: 1 May 19
Lab Number: 19-W318
Work Order #: 82-0375
Account #: 002800
Date Sampled: 5 Mar 19
Date Received: 6 Mar 19 13:27
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

PO #: 175104 OP

Event and Year: March 2019

Temp at Receipt: 1.1C

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows for Radium 226 and Radium 228.

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll

6 May 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016







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Page: 1 of 1

Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 1 May 19  
Lab Number: 19-W321  
Work Order #: 82-0375  
Account #: 002800  
Date Sampled: 4 Mar 19 14:55  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW119

Temp at Receipt: 1.1C

Event and Year: March 2019

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.07 units	NA	SM 4500 H+ B	4 Mar 19 14:55	DJN
Temperature - Field	2.40 Degrees C	NA	SM 2550B	4 Mar 19 14:55	DJN
Conductivity - Field	1210 umhos/cm	1	EPA 120.1	4 Mar 19 14:55	DJN
Radium 226	See Attached Report			22 Mar 19	OL
Radium 228	See Attached Report			13 Apr 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Cc*  
Claudette K. Carroll 6 May 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 1 of 1

Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 1 May 19  
Lab Number: 19-W323  
Work Order #: 82-0375  
Account #: 002800  
Date Sampled: 5 Mar 19 8:15  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW117

Temp at Receipt: 1.1C

Event and Year: March 2019

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.99	units	NA	SM 4500 H+ B	5 Mar 19	8:15	DJN
Temperature - Field	1.97	Degrees C	NA	SM 2550B	5 Mar 19	8:15	DJN
Conductivity - Field	8576	umhos/cm	1	EPA 120.1	5 Mar 19	8:15	DJN
Radium 226	See Attached Report				22 Mar 19		OL
Radium 228	See Attached Report				13 Apr 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> 6 May 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 1 of 1

Samantha Davies  
Montana Dakota Utilities  
5181 Southgate Dr  
Billings MT 59102

Report Date: 1 May 19  
Lab Number: 19-W325  
Work Order #: 82-0375  
Account #: 002800  
Date Sampled: 5 Mar 19 7:05  
Date Received: 6 Mar 19 13:27  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW120

Temp at Receipt: 1.1C

Event and Year: March 2019

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.62 units	NA	SM 4500 H+ B	5 Mar 19 7:05	DJN
Temperature - Field	5.27 Degrees C	NA	SM 2550B	5 Mar 19 7:05	DJN
Conductivity - Field	3949 umhos/cm	1	EPA 120.1	5 Mar 19 7:05	DJN
Radium 226	See Attached Report			22 Mar 19	OL
Radium 228	See Attached Report			14 Apr 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>R</sup>  
6 May 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

⊙ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





Date: 4/26/2019

CLIENT: MVTL Laboratories, Inc.  
Project: 201982-0375  
Lab Order: S1903117

**CASE NARRATIVE**  
Report ID: S1903117001

Samples 19-W317 Dup 1, 19-W318 Field Blank(FB), 19-W319 MW103, 19-W320 MW110, 19-W321 MW119, 19-W322 MW111, 19-W323 MW117, 19-W324 MW118 and 19-W325 MW120 were received on March 11, 2019.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions  
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition  
40 CFR Parts 136 and 141  
40 CFR Part 50, Appendices B, J, L, and O  
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012  
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/26/2019
Report ID S1903117001

ProjectName: 201982-0375
Lab ID: S1903117-001
ClientSample ID: 19-W317 Dup 1
COC:
PWS ID:

WorkOrder: S1903117
CollectionDate: 3/5/2019
DateReceived: 3/11/2019 10:18:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/26/2019  
**Report ID** S1903117001

**ProjectName:** 201982-0375  
**Lab ID:** S1903117-002  
**ClientSample ID:** 19-W318 Field Blank(FB)  
**COC:**  
**PWS ID:**

**WorkOrder:** S1903117  
**CollectionDate:** 3/5/2019  
**DateReceived:** 3/11/2019 10:18:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.02	pCi/L		0.2	SM 7500 Ra-B	03/22/2019 1216 WN
Radium 226 Precision (±)	0.03	pCi/L			SM 7500 Ra-B	03/22/2019 1216 WN
Radium 228	-1.7	pCi/L		2	Ga-Tech	04/13/2019 829 WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	04/13/2019 829 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/26/2019  
**Report ID** S1903117001

**ProjectName:** 201982-0375  
**Lab ID:** S1903117-003  
**ClientSample ID:** 19-W319 MW103  
**COC:**  
**PWS ID:**

**WorkOrder:** S1903117  
**CollectionDate:** 3/4/2019 7:07:00 PM  
**DateReceived:** 3/11/2019 10:18:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

**Radionuclides - Total**

Radium 226	0.14	pCi/L		0.2	SM 7500 Ra-B	03/22/2019 1216 WN
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	03/22/2019 1216 WN
Radium 228	-0.3	pCi/L		2	Ga-Tech	04/13/2019 1133 WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	04/13/2019 1133 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/26/2019  
**Report ID** S1903117001

**ProjectName:** 201982-0375  
**Lab ID:** S1903117-004  
**ClientSample ID:** 19-W320 MW110  
**COC:**  
**PWS ID:**

**WorkOrder:** S1903117  
**CollectionDate:** 3/5/2019 12:39:00 PM  
**DateReceived:** 3/11/2019 10:18:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

**Radionuclides - Total**

Radium 226	0.13	pCi/L		0.2	SM 7500 Ra-B	03/22/2019 1216 WN
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	03/22/2019 1216 WN
Radium 228	0.6	pCi/L		2	Ga-Tech	04/13/2019 1437 WN
Radium 228 Precision (±)	2.2	pCi/L			Ga-Tech	04/13/2019 1437 WN

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/26/2019
Report ID S1903117001

ProjectName: 201982-0375
Lab ID: S1903117-005
ClientSample ID: 19-W321 MW119
COC:
PWS ID:

WorkOrder: S1903117
CollectionDate: 3/4/2019 2:55:00 PM
DateReceived: 3/11/2019 10:18:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init

Radionuclides - Total

Table with 7 columns: Analyte, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radium 226, Radium 226 Precision, Radium 228, and Radium 228 Precision.

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/26/2019
Report ID S1903117001

ProjectName: 201982-0375
Lab ID: S1903117-006
ClientSample ID: 19-W322 MW111
COC:
PWS ID:

WorkOrder: S1903117
CollectionDate: 3/5/2019 5:36:00 PM
DateReceived: 3/11/2019 10:18:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/26/2019  
**Report ID** S1903117001

**ProjectName:** 201982-0375  
**Lab ID:** S1903117-007  
**ClientSample ID:** 19-W323 MW117  
**COC:**  
**PWS ID:**

**WorkOrder:** S1903117  
**CollectionDate:** 3/5/2019 8:15:00 AM  
**DateReceived:** 3/11/2019 10:18:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.8	pCi/L		0.2	SM 7500 Ra-B	03/22/2019 1216 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/22/2019 1216 WN
Radium 228	2.2	pCi/L		2	Ga-Tech	04/13/2019 2348 WN
Radium 228 Precision (±)	5.9	pCi/L			Ga-Tech	04/13/2019 2348 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager





Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/26/2019
Report ID S1903117001

ProjectName: 201982-0375
Lab ID: S1903117-008
ClientSample ID: 19-W324 MW118
COC:
PWS ID:

WorkOrder: S1903117
CollectionDate: 3/5/2019 9:58:00 AM
DateReceived: 3/11/2019 10:18:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init

Radionuclides - Total

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/26/2019  
**Report ID** S1903117001

**ProjectName:** 201982-0375  
**Lab ID:** S1903117-009  
**ClientSample ID:** 19-W325 MW120

**WorkOrder:** S1903117  
**CollectionDate:** 3/5/2019 7:05:00 AM  
**DateReceived:** 3/11/2019 10:18:00 AM

**COC:**  
**PWS ID:**

**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.16	pCi/L		0.2	SM 7500 Ra-B	03/22/2019 1216 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/22/2019 1216 WN
Radium 228	-0.2	pCi/L		2	Ga-Tech	04/14/2019 555 WN
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	04/14/2019 555 WN

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



### ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.  
Work Order: S1903117  
Project: 201982-0375

Date: 4/26/2019  
Report ID: S1903117001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-564 (04/12/19 14:08)	Analyte	RunNo:	167190	PrepDate:	03/27/19 0:00	BatchID	15777		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-564 (04/12/19 17:11)	Analyte	RunNo:	167190	PrepDate:	03/27/19 0:00	BatchID	15777		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		27	1	31.4		85.6	65.9 - 132		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-564 (04/12/19 23:18)	Analyte	RunNo:	167190	PrepDate:	03/27/19 0:00	BatchID	15777		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		27	1	31.4	ND	84.5	50 - 139		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-564 (04/13/19 02:22)	Analyte	RunNo:	167190	PrepDate:	03/27/19 0:00	BatchID	15777		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		34	1	27	25.0	109	20		

Radium 226 in Water -		Sample Type	MBLK		Units: pCi/L				
MB-1983 (03/22/19 12:16)	Analyte	RunNo:	166469	PrepDate:	03/13/19 0:00	BatchID	15717		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.2						

Radium 226 in Water -		Sample Type	LCS		Units: pCi/L				
LCS-1983 (03/22/19 12:16)	Analyte	RunNo:	166469	PrepDate:	03/13/19 0:00	BatchID	15717		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.6	0.2	6.9		81.4	67.1 - 122		

Radium 226 in Water -		Sample Type	LCSD		Units: pCi/L				
LCSD-1983 (03/22/19 12:16)	Analyte	RunNo:	166469	PrepDate:	03/13/19 0:00	BatchID	15717		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		5.3	0.2	5.6	5.80	76.8	20		

Radium 226 in Water -		Sample Type	MS		Units: pCi/L				
S1903117-001AMS (03/22/19 12:16)	Analyte	RunNo:	166469	PrepDate:	03/13/19 0:00	BatchID	15717		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		11.2	0.2	13.8	0.3	78.3	65 - 131		

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - G Analyzed at IML Gillette laboratory
  - J Analyte detected below quantitation limits
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - X Matrix Effect
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - O Outside the Range of Dilutions
  - S Spike Recovery outside accepted recovery limits



**LABORATORIES, Inc.**

2616 E Broadway Ave

Bismarck, ND 58501

Phone: (701) 258-9720

Toll Free: (800) 279-6885 Fax: (701) 258-9724

**Chain of Custody Record**

Page 1 of 1

**201982-0375**

<b>Company Name and Address:</b>  <p style="text-align: center;"><b>MVTI</b> 2616 E Broadway Bismarck, ND 58501</p>	<b>Account #:</b>  	<b>Phone #:</b> 701-258-9720
<b>Billing Address (indicate if different from above):</b>  <p style="text-align: center;">PO Box 249 New Ulm, MN 56073</p>	<b>Contact:</b> Claudette	<b>Fax #:</b> For faxed report check box <input type="checkbox"/>
	<b>Name of Sampler:</b>	<b>E-mail:</b> ccarroll@mvti.com For e-mail report check box <input type="checkbox"/>
	<b>Quote Number</b>	<b>Date Submitted:</b> 6-Mar-19
	<b>Project Name/Number:</b>	<b>Purchase Order #:</b> BL6147

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTI Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
51903117												
001	19-W317	Dup 1	GW	5-Mar-19	N/A							Ra226 & Ra228
002	19-W318	Field Blank (FB)	GW	5-Mar-19	N/A							Ra226 & Ra228
003	19-W319	MW103	GW	4-Mar-19	1907							Ra226 & Ra228
004	19-W320	MW110	GW	5-Mar-19	1239							Ra226 & Ra228
005	19-W321	MW119	GW	4-Mar-19	1455							Ra226 & Ra228
006	19-W322	MW111	GW	5-Mar-19	1736							Ra226 & Ra228
007	19-W323	MW117	GW	5-Mar-19	0815							Ra226 & Ra228
008	19-W324	MW118	GW	5-Mar-19	0958							Ra226 & Ra228
009	19-W325	MW120	GW	5-Mar-19	0705							Ra226 & Ra228

Comments: All results must be reported as a numerical value.

2 coolers

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
Tera Olson	6-Mar-19	1700		Rashy Boyd	3.11.19	10:18 0.7°C
2.						201 0.5°C

# MVTL Calibration Worksheet

Site: MDU Lewis and Clark

Technician: Dan N. Sweeney

Instrument  
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

**Pre Site Calibration**

Date: 4 March 19 Time: 0705

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	15.18	6.96	7.00	6.95-7.05	-39.4	0 +/- 50
Buffer 10	15.06	10.06	10.00	9.95-10.05	-218.3	-180 +/- 50
Buffer 4	14.85	4.01	4.00	4.95-5.05	138.7	180 +/- 50

**Conductivity**

Buffer 1413	14.88	1429	1413	±10%	Buffer 5000	5019
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**ORP**

231 mV @ 25C	5.05	241.1	231.6	±10 mV
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**DO**

	14.86	8.76	9.57	mg/L	720.6
--	-------	------	------	------	-------

Barometric Pressure (mm Hg)

**Pre Site Calibration**

Date: 5 March 19 Time: 0623

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	21.10	7.06	7.00	6.95-7.05	-43.4	0 +/- 50
Buffer 10	19.04	9.93	9.98	9.95-10.05	-217.3	-180 +/- 50
Buffer 4	19.07	3.98	4.00	4.95-5.05	131.8	180 +/- 50

**Conductivity**

Buffer 1413	18.94	1393	1413	±10%	Buffer 5000	4984
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**ORP**

231 mV @ 25C	8.16	220.1	231.7	±10 mV
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**DO**

	20.48	8.98	8.70	mg/L	716.0
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Barometric Pressure (mm Hg)

**Post Site Check**

Time: 0800

pH	Temp °C	Reading
Buffer 7	13.03	7.00

**Conductivity**

Buffer 5000	13.41	4998
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**Post Site Check**

Time: 0915

pH	Temp °C	Reading
Buffer 7	9.72	6.95

**Conductivity**

Buffer 5000	10.73	5023
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# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 103  
Sampling Personal: Darin Arieswaag

Weather Conditions: Temp: 4 °F Wind: West @ 30 Precip: Sunny / Partly Cloudy (Cloudy)

### Well Information

Well Locked?	Yes	<del>No</del>	
Well Labeled?	<del>Yes</del>	No	
Casing Straight?	<del>Yes</del>	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	11.19		ft
Depth to Top of Pump:	18.47		ft
Water Level After Sample:	11.24		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes	<del>No</del>		
Duplicate Sample?:	Yes	<del>No</del>		
Duplicate Sample ID:				
Control Settings				
Purge:	3	sec.		
Recover:	27	sec.		
PSI:	-			
Purge Date:	4 Mar 19	Time Purging Began:	1802	am/pm
Well Purged Dry?	Yes	<del>No</del>	Time Purged Dry:	
Sample Date:	4 Mar 19	Time of Sampling:	1907	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric			

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.	
SEQ #	Time									Clear, Slightly Turbid, Turbid	
1	1807	5.29	2269	7.13	0.193	-249.3	92.0	11.14	100	500	Slightly turbid
2	1837	4.69	21443	7.12	0.23	-306.0	14.0	11.23	100	7000	cl
3	1857	5.19	1429	7.13	0.24	-318.8	5.07	11.28	100	2000	cl
4	1902	4.99	1428	7.13	0.24	-320.5	4.91	11.24	100	500	cl
5	1907	4.97	1424	7.13	0.23	-316.3	4.69	11.24	100	500	cl
6											
7											
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 6500 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 109  
Sampling Personal: Darren Mesway

Weather Conditions: \_\_\_\_\_ Temp: \_\_\_\_\_ °F Wind: \_\_\_\_\_ @ \_\_\_\_\_ Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:			ft
Depth to Top of Pump:			ft
Water Level After Sample:			ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes	No		
Duplicate Sample?:	Yes	No		
Duplicate Sample ID:				
Purge Date:	<u>4/11/19</u>	Time Purging Began:		am/pm
Well Purged Dry?:	Yes	No	Time Purged Dry:	am/pm
Sample Date:		Time of Sampling:		am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric			

Control Settings	
Purge:	sec.
Recover:	sec.
PSI:	

### Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
SEQ #	Time										
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Stabilized: Yes No Total Volume Removed: \_\_\_\_\_ mL

Comments: Well is removed



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: MW 110  
Sampling Personal: *Parren Meswag*

Weather Conditions: Temp: *18* °F Wind: *west @ 20* Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:	—		
Casing Diameter:	2"		
Water Level Before Purge:	<i>9.87</i>	ft	
Depth to Top of Pump:	— ft		
Water Level After Sample:	<i>9.87</i>	ft	
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes	<input checked="" type="checkbox"/> No		
Duplicate Sample?:	Yes	<input checked="" type="checkbox"/> No		
Duplicate Sample ID:	—			
<i>lin bladder pump</i>				
Control Settings				
Purge:	<i>3</i>	sec.		
Recover:	<i>17</i>	sec.		
PSI:				
Purge Date:	<i>5 Mar 19</i>	Time Purging Began:	<i>1104</i>	<u>am</u> / <u>pm</u>
Well Purged Dry?	Yes	<input checked="" type="checkbox"/> No	Time Purged Dry:	— am/pm
Sample Date:	<i>5 Mar 19</i>	Time of Sampling:	<i>1239</i>	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric + Additional Constituents			

### Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
1	<i>1109</i>	<i>5.307</i>	<i>106.6</i>	<i>7.107</i>	<i>6.22</i>	<i>-179.8</i>	<i>72.2</i>	<i>9.86</i>	<i>100</i>	<i>500</i>	<i>slightly turbid</i>
2	<i>1139</i>	<i>6.98</i>	<i>106.5</i>	<i>7.12</i>	<i>6.23</i>	<i>-187.4</i>	<i>13.4</i>	<i>9.90</i>	<i>100</i>	<i>3000</i>	<i>clear</i>
3	<i>1204</i>	<i>6.96</i>	<i>106.6</i>	<i>7.12</i>	<i>7.00</i>	<i>-182.3</i>	<i>8.47</i>	<i>9.87</i>	<i>100</i>	<i>2500</i>	<i>clear</i>
4	<i>1209</i>	<i>6.84</i>	<i>106.5</i>	<i>7.11</i>	<i>4.39</i>	<i>-175.6</i>	<i>5.62</i>	<i>9.87</i>	<i>100</i>	<i>1500</i>	<i>clear</i>
5	<i>1219</i>	<i>7.03</i>	<i>106.5</i>	<i>7.11</i>	<i>4.32</i>	<i>-175.7</i>	<i>4.94</i>	<i>9.87</i>	<i>100</i>	<i>1000</i>	<i>clear</i>
6	<i>1234</i>	<i>6.59</i>	<i>106.5</i>	<i>7.11</i>	<i>4.30</i>	<i>-174.3</i>	<i>4.83</i>	<i>9.87</i>	<i>100</i>	<i>500</i>	<i>clear</i>
7	<i>1239</i>	<i>6.68</i>	<i>106.4</i>	<i>7.11</i>	<i>4.22</i>	<i>-173.6</i>	<i>4.49</i>	<i>9.87</i>	<i>100</i>	<i>500</i>	<i>clear</i>
8											
9											
10											

Stabilized:  Yes  No

Total Volume Removed: 9500 mL

Comments: *Used a lin bladder pump on well, due to obstruction.*





# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave., Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 119  
Sampling Personal: Patton N. Sweeney

Weather Conditions: Temp: 4 °F Wind: West @ 30 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	No
Well Labeled?	Yes	No
Casing Straight?	Yes	No
Grout Seal Intact?	Yes	No
Repairs Necessary:	Not Visible	
Casing Diameter:	2"	
Water Level Before Purge:	9.58	ft
Depth to Top of Pump:	14.11	ft
Water Level After Sample:	9.64	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No			
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No			
Duplicate Sample ID:	—			
Purge Date:	3/19/19	Time Purging Began:	1220	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No	Time Purged Dry:	—	am/pm
Sample Date:	4/19/19	Time of Sampling:	1455	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
		4 - 1L Nitric		

Control Settings	
Purge:	3 sec.
Recover:	27 sec.
PSI:	—

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	3.55	1167	6.91	2.07	-29.7	225	9.64	100	500	Turbid
2	3.56	1181	7.04	1.50	-16.6	170	9.62	100	3000	Slightly Turbid
3	2.02	1202	7.05	1.69	-12.9	26.8	9.68	100	3000	Clear
4	2.18	1202	7.05	1.73	-14.7	9.72	9.65	100	3000	Clear
5	2.71	1203	7.05	1.89	-13.2	8.91	9.67	100	3000	Clear
6	2.60	1204	7.06	1.68	-20.9	5.19	9.68	100	2000	Clear
7	2.71	1205	7.07	1.77	-13.3	4.98	9.68	100	500	Clear
8	2.40	1210	7.07	1.76	-11.3	4.92	9.65	100	500	Clear
9										
10										

Total Volume Removed: 15,500 mL

Stabilized: Yes  No

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: March 2018  
 Sample ID: MW111  
 Sampling Personal: Darren Nissman

Weather Conditions: Temp: 16 °F Wind: west @ 15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	<u>8.08</u> ft		
Depth to Top of Pump:	<u>14.25</u> ft		
Water Level After Sample:	<u>8.20</u> ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	No	
Duplicate Sample ID:	<u>Dup 1</u>		
Purge Date:	<u>5 Mar 19</u>	Time Purging Began:	<u>1646</u> am/pm
Well Purged Dry?	Yes	<input checked="" type="checkbox"/> No	Time Purged Dry: _____ am/pm
Sample Date:	<u>5 Mar 19</u>	Time of Sampling:	<u>1736</u> am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4 - 1L Nitric + Additional Constituents		

Control Settings	
Purge:	<u>3</u> sec.
Recover:	<u>27</u> sec.
PSI:	<u>-</u>

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description:	
										Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid	
1	<u>16.51</u>	<u>5188</u>	<u>3951</u>	<u>6.79</u>	<u>1.65</u>	<u>226.7</u>	<u>25.6</u>	<u>8.19</u>	<u>500</u>	<u>cl</u>	
2	<u>17.06</u>	<u>5113</u>	<u>3576</u>	<u>6.95</u>	<u>2.06</u>	<u>152.4</u>	<u>11.1</u>	<u>8.20</u>	<u>100</u>	<u>1500</u>	<u>cl</u>
3	<u>17.16</u>	<u>5153</u>	<u>3465</u>	<u>6.99</u>	<u>2.86</u>	<u>152.4</u>	<u>4.13</u>	<u>8.20</u>	<u>100</u>	<u>1000</u>	<u>cl</u>
4	<u>17.21</u>	<u>5151</u>	<u>3483</u>	<u>6.99</u>	<u>2.71</u>	<u>151.4</u>	<u>3.10</u>	<u>8.20</u>	<u>100</u>	<u>500</u>	<u>cl</u>
5	<u>17.26</u>	<u>5144</u>	<u>3483</u>	<u>7.00</u>	<u>2.72</u>	<u>150.7</u>	<u>2.35</u>	<u>8.20</u>	<u>100</u>	<u>500</u>	<u>cl</u>
6	<u>17.31</u>	<u>5142</u>	<u>3484</u>	<u>6.99</u>	<u>2.70</u>	<u>148.0</u>	<u>2.27</u>	<u>8.20</u>	<u>100</u>	<u>500</u>	<u>cl</u>
7	<u>17.36</u>	<u>5140</u>	<u>3485</u>	<u>6.99</u>	<u>2.68</u>	<u>147.4</u>	<u>2.18</u>	<u>8.20</u>	<u>100</u>	<u>500</u>	<u>cl</u>
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 5000 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 117  
Sampling Personal: Darren Niswaa

Weather Conditions: Temp: °F Wind: @ Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	✓		
Casing Diameter:	2"		
Water Level Before Purge:	7.53		ft
Depth to Top of Pump:	9.86		ft
Water Level After Sample:	7.34		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	<input checked="" type="checkbox"/> No	
Duplicate Sample?:	Yes	<input checked="" type="checkbox"/> No	
Duplicate Sample ID:	✓		
Purge Date:	4 Mar 19	Time Purging Began:	8:17:23 am/pm
Well Purged Dry?	Yes	No	Time Purged Dry: 08:05 am/pm
Sample Date:	5 Mar 19	Time of Sampling:	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	2x 1L Nitric of unknown		

### Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.
SEQ #	Time										Clear, Slightly Turbid, Turbid
1	1728	1.23	8276	6.87	2.42	-134.0	673	8.36	100	500	Turbid
2	1748	1.24	8322	6.86	4.22	-131.1	136	Top	100	2000	Slightly Turbid
3											
4	0810	5 Mar 19	Purged 5 min to clear line					9.44			
5	0815	1.197	8576	6.99	6.27	-206.4	944	Top	100	500	ST
6											
7	0815		Purged to purge					Top 9.86			
8											
9											
10											

Stabilized: Yes  No

Total Volume Removed: 3006 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 118  
Sampling Personal: Darren Nieswanger

Weather Conditions: Temp: 57 °F Wind: SW @ 13 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	8.88 ft		
Depth to Top of Pump:	9.74 ft		
Water Level After Sample:	8.90 ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Duplicate Sample?:	<del>Yes</del> <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Duplicate Sample ID:				
Purge Date:	5 Mar 19	Time Purging Began:	0853	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sample Date:	5 Mar 19	Time of Sampling:	0958	am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric + Additional Constituents			

Control Settings	
Purge:	3 sec.
Recover:	27 sec.
PSI:	-

### Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
SEQ #	Time										
1	0858	3.76	1559	7.21	2.61	-228.1	2.04	8.91	100	500	Turbid
2	0928	3.60	1574	7.19	2.61	-229.0	2.22	8.89	100	3000	clear
3	0943	4.28	1578	7.19	2.48	-227.3	5.24	8.92	100	1500	clear
4	0948	4.09	1579	7.19	2.47	-228.0	5.20	8.91	100	500	clear
5	0953	4.22	1580	7.20	2.63	-215.1	5.32	8.91	100	500	clear
6	0958	4.35	1580	7.20	2.61	-224.9	4.90	8.91	100	500	clear
7											
8											
9											
10											

Stabilized:  Yes  No

Comments:

Total Volume Removed: 6500 mL



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: March 2018  
Sample ID: 120  
Sampling Personal: Darren Nieswang

Weather Conditions: Temp: 7 °F Wind: West @ 17 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	Yes	No	(Not Visible)
Repairs Necessary:	-		
Casing Diameter:	2"		
Water Level Before Purge:	15.97 ft		
Depth to Top of Pump:	16.81 ft		
Water Level After Sample:	TOP of pump ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder			Control Settings
Sampling Method:	Bladder			
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Trapping	
Duplicate Sample?:	Yes	<input checked="" type="checkbox"/> No		
Duplicate Sample ID:	-			Purge: 3 sec.
Purge Date:	4 Mar 19	Time Purging Began:	16:00	am/pm
Well Purged Dry?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Time Purged Dry:	16:45 am/pm
Sample Date:	4 Mar 19	Time of Sampling:		am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	4 - 1L Nitric			

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect.	
1	16:05	1.03	3641	6.59	1.30	-212.1	14.5	16.16	100	500	Clear
2	16:20	3.63	3568	6.63	2.91	-266.5	6.62	16.81	100	1500	Clear
3	16:35	1.20	3676	6.60	1.19	-259.7	4.68	16.81	100	1500	Clear
4	16:40	1.23	3636	6.59	1.20	-247.3	4.44	16.81	100	500	Clear
5	16:45	1.24	3575	6.61	1.28	-251.4	50.1	16.81	100	500	Clear
6											
7	17:00	Purged line for 5 min.						16:03			
8	07:05	5.217	3949	6.62	3.12	-255.7	190		100	500	Clear slightly turbid
9											
10											

Stabilized: Yes  No

Total Volume Removed: 5000 mL

Comments:



**Laboratories, Inc.**

2616 E. Broadway  
Bismarck, ND 58501  
Phone (701) 258-9720

# Chain of Custody Record

Project Name: <b>MDU Lewis and Clark</b>	Event: <b>March 2019</b>	Work Order Number: <b>82-0375</b>
Report To: <b>MDU</b> Attn: <b>Samantha Davies</b> Address: <b>5181 Southgate Dr. Billings, MT 59102</b> phone: <b>406-896-4227</b>	Carbon Copy: Attn: Address:	Name of Sampler(s): <b>Darren Prieswain</b>

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type							Field Parameters			Analysis Required	
					1 liter Nitric								Temp (°C)	Spec. Cond.		pH
W317	Dup 1	5 Mar 19	NA	GW	4								NA	NA	NA	Rad 226 and 228
W318	Field Blank (FB)	5 Mar 19	NA	GW	4								NA	NA	NA	
W319	MW103	4 Mar 19	1907	GW	4								4.97	1424	7.13	
	MW109	4 Mar 19	-	GW	* 4								Well removed			
W320	MW110	5 Mar 19	1239	GW	4								6.68	1064	7.11	
W321	MW119	4 Mar 19	1455	GW	4								2.40	1210	7.07	
W322	MW111	5 Mar 19	1736	GW	4								5.40	3485	6.99	
W323	MW117	5 Mar 19	0815	GW	# 4								1.97	8576	6.99	
W324	MW118	5 Mar 19	0958	GW	4								4.35	1580	7.20	
W325	MW120	5 Mar 19	0705	GW	4								5.27	3949	6.62	

Comments: # 4 Mar 19 @AN # 5 Mar 19 @AN

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1 <i>John Nies</i>	6 Mar 19 1327	<del>Log In</del> Walk In #2	1.1 <del>TM562</del> TM805

Received by:	
Name:	Date/Time
<i>John Nies</i>	6 Mar 2019 1327



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724  
 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
 www.mvttl.com



## REVISION 1

Page: 1 of 2

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 1 Oct 19  
 Lab Number: 19-W3294  
 Work Order #: 82-2358  
 Account #: 002800  
 Date Sampled: 27 Aug 19  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: Dup 1

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.7	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
Total Alkalinity	351	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Fluoride	0.70	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	378	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	22.1	mg/l	1.0	SM4500-CL-E	6 Sep 19 13:56	EV
Nitrate-Nitrite as N	6.85	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	961	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	91.9	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Magnesium - Total	109	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Sodium - Total	86.7	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Potassium - Total	8.2	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Lithium - Total	0.055	mg/l	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	1.16	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	97.6	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	111	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	88.9	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	8.8	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.049	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	1.22	mg/l	0.10	6010D	30 Aug 19 15:47	SZ
Antimony - Total	0.0042	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	0.0027	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0247	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	25 Sep 19 19:40	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0198	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	0.0447	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	25 Sep 19 19:40	MDE
Antimony - Dissolved	0.0039	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	0.0026	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

- @ = Due to sample matrix
- ! = Due to sample quantity
- # = Due to concentration of other analytes
- \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724  
1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
www.mvttl.com



Page: 2 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3294  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: Dup 1

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0232 mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020B	24 Sep 19 14:57	MDE
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0204 mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0477 mg/l	0.0050	6020B	19 Sep 19 12:37	MDE
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020B	24 Sep 19 14:57	MDE

\* Holding time exceeded

Approved by:

Claudette K. Carroll

CC  
10 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
| = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 2

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 1 Oct 19  
 Lab Number: 19-W3295  
 Work Order #: 82-2358  
 Account #: 002800  
 Date Sampled: 27 Aug 19  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: Field Blank (FB)

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 5.9	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	6 Sep 19 13:56	EV
Nitrate-Nitrite as N	< 0.1	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	< 10	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	< 0.02	mg/l	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	< 0.02	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010D	30 Aug 19 15:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum <sup>2</sup> Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	< 0.005	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

- ⊖ = Due to sample matrix
- ⊙ = Due to sample quantity
- # = Due to concentration of other analytes
- \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3295  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: Field Blank (FB)

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Barium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19	15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19	9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19	9:30	MDE
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19	9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17 Sep 19	9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19	9:30	MDE

\* Holding time exceeded

Approved by:

Claudette K. Carroll

LC  
10 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

- @ = Due to sample matrix
- ! = Due to sample quantity
- # = Due to concentration of other analytes
- \* = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 2 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3296  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19 10:15  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW103

PO #: 175104 OP

Event and Year: August 2019

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	0.0037	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	0.0028	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0222	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	24 Sep 19 14:57	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0201	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0541	mg/l	0.0050	6020B	17 Sep 19 9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	24 Sep 19 14:57	MDE

\* Holding time exceeded

Approved by:

Claudette K. Carroll

10 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
? = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3297  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 26 Aug 19 15:50  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW110

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.8	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	12	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
pH - Field	7.26	units	NA	SM 4500 H+ B	26 Aug 19 15:50	JSM
Temperature - Field	16.8	Degrees C	NA	SM 2550B	26 Aug 19 15:50	JSM
Total Alkalinity	338	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Conductivity - Field	1023	umhos/cm	1	EPA 120.1	26 Aug 19 15:50	JSM
Fluoride	0.49	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	181	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	21.7	mg/l	1.0	SM4500-Cl-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	7.15	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	695	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	93.0	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	54.2	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	82.9	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	7.2	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.040	mg/l	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	0.22	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	91.5	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	53.7	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	84.3	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	7.4	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.038	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	0.22	mg/l	0.10	6010D	30 Aug 19 16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0324	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0034	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	< 0.005	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix      # = Due to concentration of other analytes  
! = Due to sample quantity      + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3297  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 26 Aug 19 15:50  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW110

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0289	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0033	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17 Sep 19 9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by:

*Claudette K. Carroll*

*10 OCT 19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3298  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 26 Aug 19 12:35  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW119

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0296	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0041	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17 Sep 19 9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by:

*Claudette K. Carroll*

CC  
1 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 2

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 1 Oct 19  
 Lab Number: 19-W3299  
 Work Order #: 82-2358  
 Account #: 002800  
 Date Sampled: 27 Aug 19 16:27  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW111

PO #: 175104 OP

Event and Year: August 2019

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.7	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
pH - Field	7.17	units	NA	SM 4500 H+ B	27 Aug 19 16:27	JSM
Temperature - Field	15.0	Degrees C	NA	SM 2550B	27 Aug 19 16:27	JSM
Total Alkalinity	436	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Conductivity - Field	3757	umhos/cm	1	EPA 120.1	27 Aug 19 16:27	JSM
Fluoride	2.11	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	2130	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	36.6	mg/l	1.0	SM4500-Cl-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	11.2	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	3680	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	179	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	520	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	139	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	12.1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.200	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	8.20	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	181	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	519	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	146	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	12.6	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.201	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	7.94	mg/l	0.10	6010D	30 Aug 19 16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0196	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	0.0043	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0518	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	0.0612	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

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 ) = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
www.mvttl.com



Page: 2 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3299  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19 16:27  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW111

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0197	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	0.0033	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0556	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0692	mg/l	0.0050	6020B	19 Sep 19 12:37	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by:

*Claudette K. Carroll*

CC  
1 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 2 of 2

Amended 23Oct19 (T1 rerun)

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3300  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19 13:28  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW117

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Selenium - Total	0.0333	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	23 Oct 19 13:51	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0169	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	0.0118	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0058	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0381	mg/l	0.0050	6020B	19 Sep 19 12:37	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by: Claudette K. Carroll *CC*  
*7/10/19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

- @ = Due to sample matrix
- ! = Due to sample quantity
- # = Due to concentration of other analytes
- \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 1 Oct 19  
 Lab Number: 19-W3301  
 Work Order #: 82-2358  
 Account #: 002800  
 Date Sampled: 28 Aug 19 9:10  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW118

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.8	units	N/A	SM4500 H+ B	29 Aug 19 18:00	SVS
Total Suspended Solids	4	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
pH - Field	7.27	units	NA	SM 4500 H+ B	28 Aug 19 9:10	JSM
Temperature - Field	16.2	Degrees C	NA	SM 2550B	28 Aug 19 9:10	JSM
Total Alkalinity	359	mg/l CaCO3	20	SM2320-B	29 Aug 19 18:00	SVS
Conductivity - Field	1741	umhos/cm	1	EPA 120.1	28 Aug 19 9:10	JSM
Fluoride	1.18	mg/l	0.10	SM4500-F-C	3 Sep 19 19:00	SVS
Sulfate	600	mg/l	5.00	ASTM D516-07	5 Sep 19 9:21	EV
Chloride	21.5	mg/l	1.0	SM4500-Cl-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	7.55	mg/l	0.10	EPA 353.2	3 Sep 19 8:59	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	1280	mg/l	10	I1750-85	3 Sep 19 16:39	CC
Calcium - Total	94.0	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	173	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	95.5	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	9.0	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.102	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	1.82	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	93.1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	171	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	95.2	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	9.2	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.097	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	1.82	mg/l	0.10	6010D	30 Aug 19 16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0248	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	0.0030	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0403	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	0.0546	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

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 ! = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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www.mvttl.com



Page: 2 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3301  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 28 Aug 19 9:10  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW118

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0234	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0446	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0586	mg/l	0.0050	6020B	19 Sep 19 12:37	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by:

*Claudette K. Carroll*

*CC  
1 OCT 19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix      # = Due to concentration of other analytes  
! = Due to sample quantity      + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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www.mvttl.com



Page: 1 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3302  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19 12:35  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

PO #: 175104 OP

Sample Description: MW120

Temp at Receipt: 4.2C

Event and Year: August 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.4	units	N/A	SM4500 H+ B	29 Aug 19 18:00	SVS
Total Suspended Solids	8	mg/l	2	I3765-85	30 Aug 19 16:24	SVS
pH - Field	6.69	units	NA	SM 4500 H+ B	27 Aug 19 12:35	JSM
Temperature - Field	12.9	Degrees C	NA	SM 2550B	27 Aug 19 12:35	JSM
Total Alkalinity	854	mg/l CaCO3	20	SM2320-B	29 Aug 19 18:00	SVS
Conductivity - Field	7820	umhos/cm	1	EPA 120.1	27 Aug 19 12:35	JSM
Fluoride	0.42	mg/l	0.10	SM4500-F-C	3 Sep 19 19:00	SVS
Sulfate	5220	mg/l	5.00	ASTM D516-07	5 Sep 19 9:21	EV
Chloride	63.5	mg/l	1.0	SM4500-Cl-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	16.3	mg/l	0.10	EPA 353.2	3 Sep 19 8:59	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 12:46	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	8690	mg/l	10	I1750-85	30 Aug 19 10:32	CC
Calcium - Total	530	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	1140	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	585	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	37.5	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.175	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	11.1	mg/l	0.10	6010D	30 Aug 19 14:47	SZ
Calcium - Dissolved	520	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	1120	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	590	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	38.4	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.165	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	10.3	mg/l	0.10	6010D	30 Aug 19 16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0198	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	0.0238	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0050	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Selenium - Total	0.0067	mg/l	0.0050	6020B	24 Sep 19 15:10	MDE

RL = Method Reporting Limit

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@ = Due to sample matrix      # = Due to concentration of other analytes  
| = Due to sample quantity      + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
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Page: 2 of 2

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 1 Oct 19  
Lab Number: 19-W3302  
Work Order #: 82-2358  
Account #: 002800  
Date Sampled: 27 Aug 19 12:35  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

Sample Description: MW120

PO #: 175104 OP

Event and Year: August 2019

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Barium - Dissolved	0.0193	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Chromium - Dissolved	0.0269	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE
Molybdenum - Dissolved	0.0044	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE
Selenium - Dissolved	0.0071	mg/l	0.0050	6020B	24 Sep 19 14:57	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17 Sep 19 9:30	MDE

\* Holding time exceeded

Approved by:

Claudette K. Carroll

CC  
10 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity \* = Due to internal standard response

CERTIFICATION: ND # ND-00016





**Laboratories, Inc.**

2616 E. Broadway  
Bismarck, ND 58501  
Phone (701) 258-9720

# Chain of Custody Record

<b>Project Name:</b> MDU Lewis and Clark	<b>Event:</b> August 2019	<b>Work Order Number:</b> 82-2358
<b>Report To:</b> MDU Attn: Abbie Krebsbach Address: 400 N. 4th St. Bismarck, ND 58501 phone: 701-222-7844	<b>Carbon Copy:</b> Attn: Address:	<b>Name of Sampler(s):</b> 

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type				Field Parameters			Analysis Required
					1 liter	500mL Nitric	500mL Nitric (filtered)	250 mL Sulfuric	Temp (°C)	Spec. Cond.	pH	
W3294	Dup 1	27 Aug 19	NA	GW	X	X	X	X	NA	NA	NA	MDU L&C 2019
W3295	Field Blank (FB)	27 Aug 19	NA	GW	X	X	X	X	NA	NA	NA	
W3296	MW103	27 Aug 19	1015	GW	X	X	X	X	13.39	1427	7.30	
W3297	MW110	26 Aug 19	1550	GW	X	X	X	X	16.80	1023	7.26	
W3298	MW119	26 Aug 19	1235	GW	X	X	X	X	15.91	1108	7.27	
W3299	MW111	27 Aug 19	1627	GW	X	X	X	X	14.96	3757	7.17	
W3300	MW117	27 Aug 19	1328	GW	X	X	X	X	15.36	8108	7.10	
W3301	MW118	28 Aug 19	0910	GW	X	X	X	X	16.22	1741	7.27	
W3302	MW120	27 Aug 19	1235	GW	X	X	X	X	12.90	7820	6.69	

Comments:

<b>Relinquished By:</b>		<b>Sample Condition:</b>	
Name:	Date/Time	Location:	Temp (°C)
	28 Aug 19 1940	Log In Walk In #2	Rot 4.2 TM562 / TM805

<b>Received by:</b>	
Name:	Date/Time
	29 Aug 2019 0800

430 29 Aug 19



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W3302

Project: MDU Lewis & Clark

Work Order: 201982-2358

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0160	100	80-120	0.100	19W3237q	< 0.001	0.1040	104	75-125	0.1040	0.1041	104	0.1	20	-	-	< 0.001
				0.100	19W3297Q	< 0.001	0.1011	101	75-125	0.1011	0.1028	103	1.7	20	-	-	
Antimony - Total mg/l	0.1000	92	80-120	0.400	19W3299q	< 0.001	0.3968	99	75-125	0.3968	0.3932	98	0.9	20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	102	80-120	0.100	19W3237q	< 0.002	0.1126	113	75-125	0.1126	0.1101	110	2.2	20	-	-	< 0.002
				0.100	19W3297Q	< 0.002	0.1066	107	75-125	0.1066	0.1092	109	2.4	20	-	-	
Arsenic - Total mg/l	0.1000	88	80-120	0.400	19W3299q	< 0.002	0.3844	96	75-125	0.3844	0.3836	96	0.2	20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	98	80-120	0.100	19W3237q	0.0300	0.1242	94	75-125	0.1242	0.1230	93	1.0	20	-	-	< 0.002
				0.100	19W3297Q	0.0289	0.1189	90	75-125	0.1189	0.1218	93	2.4	20	-	-	
Barium - Total mg/l	0.1000	90	80-120	0.400	19W3299q	0.0196	0.3938	94	75-125	0.3938	0.3930	93	0.2	20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.1000	100	80-120	0.100	19-W3297	< 0.0005	0.1134	113	75-125	0.1134	0.1182	118	4.1	20	-	-	< 0.0005
	0.0160	102	80-120	0.400	19W3288q	< 0.0005	0.4650	116	75-125	0.4650	0.4328	108	7.2	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	103	80-120	0.400	19W3299q	< 0.0005	0.4160	104	75-125	0.4160	0.4178	104	0.4	20	-	-	< 0.0005
	0.1000	95	80-120	0.100	19W3294q	< 0.0005	0.0956	96	75-125	0.0956	0.0939	94	1.8	20	-	-	
Boron - Dissolved mg/l	0.40	95	80-120	0.400	19-W3237	0.39	0.73	85	75-125	0.73	0.72	82	1.4	20	-	-	< 0.1
	0.40	92	80-120	1.00	19-W3301	1.82	2.72	90	75-125	2.72	2.71	89	0.4	20	-	-	< 0.1
Boron - Total mg/l	0.40	100	80-120	4.00	19-W3299	8.20	12.1	98	75-125	12.1	12.2	100	0.8	20	-	-	< 0.1
	0.40	100	80-120	2.00	19-W3302	11.1	13.1	100	75-125	13.1	12.9	90	1.5	20	-	-	< 0.1
															-	-	< 0.1
															-	-	< 0.1
Cadmium - Dissolved mg/l	0.0160	101	80-120	0.100	19W3237q	< 0.0005	0.1042	104	75-125	0.1042	0.1038	104	0.4	20	-	-	< 0.0005
				0.100	19W3297Q	< 0.0005	0.1019	102	75-125	0.1019	0.1060	106	3.9	20	-	-	
Cadmium - Total mg/l	0.1000	94	80-120	0.400	19W3299q	< 0.0005	0.3854	96	75-125	0.3854	0.3796	95	1.5	20	-	-	< 0.0005
Calcium - Dissolved mg/l	20.0	111	80-120	100	19W3297q	91.5	189	98	75-125	189	189	98	0.0	20	-	-	< 1



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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W3302

Project: MDU Lewis & Clark

Work Order: 201982-2358

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Calcium - Total mg/l	20.0	111	80-120	100	19W3237q	182	267	85	75-125	267	266	84	0.4	20	-	-	< 1
	20.0	110	80-120	100	19W3297q	93.0	192	99	75-125	192	191	98	0.5	20	-	-	< 1
	20.0	114	80-120												-	-	< 1
	20.0	112	80-120												-	-	< 1
Chloride mg/l	30.0	91	80-120	60.0	19-D2794	9.6	63.2	89	80-120	63.2	67.0	96	5.8	20	-	-	< 1
	30.0	91	80-120	30.0	19-W3296	22.3	51.1	96	80-120	51.1	52.3	100	2.3	20	-	-	< 1
	30.0	91	80-120												-	-	< 1
	30.0	90	80-120												-	-	< 1
Chromium - Dissolved mg/l	0.0160	102	80-120	0.100	19W3237q	< 0.002	0.0988	99	75-125	0.0988	0.0993	99	0.5	20	-	-	< 0.002
				0.100	19W3297Q	< 0.002	0.0976	98	75-125	0.0976	0.0996	100	2.0	20	-	-	< 0.002
Chromium - Total mg/l	0.1000	93	80-120	0.400	19W3299q	0.0043	0.3980	98	75-125	0.3980	0.3944	98	0.9	20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100	19W3237q	< 0.002	0.0976	98	75-125	0.0976	0.0976	98	0.0	20	-	-	< 0.002
				0.100	19W3297Q	< 0.002	0.0954	95	75-125	0.0954	0.0960	96	0.6	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	91	80-120	0.400	19W3299q	< 0.002	0.3762	94	75-125	0.3762	0.3802	95	1.1	20	-	-	< 0.002
Fluoride mg/l	0.50	102	90-110	0.500	19-W3247	< 0.1	0.61	122	80-120	0.61	0.61	122	0.0	20	-	-	< 0.1
	0.50	104	90-110	0.500	19-W3302	0.42	0.84	84	80-120	0.84	0.83	82	1.2	20	-	-	< 0.1
Lead - Dissolved mg/l	0.0160	97	80-120	0.100	19W3237q	< 0.0005	0.0910	91	75-125	0.0910	0.0898	90	1.3	20	-	-	< 0.0005
				0.100	19W3297Q	< 0.0005	0.0910	91	75-125	0.0910	0.0924	92	1.5	20	-	-	< 0.0005
Lead - Total mg/l	0.1000	90	80-120	0.400	19W3299q	< 0.0005	0.3728	93	75-125	0.3728	0.3714	93	0.4	20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.400	104	80-120	0.400	19-W3297	0.038	0.410	93	75-125	0.410	0.411	93	0.2	20	-	-	< 0.02
Lithium - Total mg/l	0.400	99	80-120	0.400	19-W3288	0.038	0.457	105	75-125	0.457	0.449	103	1.8	20	-	-	< 0.02
	0.400	99	80-120	0.400	19-W3299	0.200	0.635	109	75-125	0.635	0.642	110	1.1	20	-	-	< 0.02
Magnesium - Dissolved mg/l	20.0	108	80-120	100	19W3297q	53.7	152	98	75-125	152	153	99	0.7	20	-	-	< 1



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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W3302

Project: MDU Lewis & Clark

Work Order: 201982-2358

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Magnesium - Total mg/l	20.0	106	80-120	100	19W3237q	104	198	94	75-125	198	197	93	0.5	20	-	-	< 1
	20.0	107	80-120	100	19W3297q	54.2	153	99	75-125	153	153	99	0.0	20	-	-	< 1
	20.0	111	80-120												-	-	< 1
	20.0	110	80-120												-	-	< 1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	19-W3237	< 0.0002	0.0020	100	70-130	0.0020	0.0019	95	5.1	20	-	-	< 0.0002
				0.002	19-W3379	< 0.0002	0.0018	90	70-130	0.0018	0.0020	100	10.5	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	100	85-115	0.100	19-M1610	< 0.01	0.1013	101	70-130						-	-	< 0.0002
	0.0020	100	85-115	0.002	19-W3247	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	< 0.0002
				0.002	19-W3301	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002
				0.002	19-W3302	< 0.0002	0.0016	80	70-130	0.0016	0.0017	85	6.1	20	-	-	< 0.0002
			0.002	A42851	< 0.0002	0.0020	100	70-130	0.0020	0.0024	120	18.2	20	-	-	< 0.0002	
Molybdenum - Dissolved mg/l	0.0160	102	80-120	0.100	19W3237q	< 0.002	0.1052	105	75-125	0.1052	0.1062	106	0.9	20	-	-	< 0.002
				0.100	19W3297Q	0.0033	0.1074	104	75-125	0.1074	0.1117	108	3.9	20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	93	80-120	0.400	19W3299q	0.0518	0.4462	99	75-125	0.4462	0.4434	98	0.6	20	-	-	< 0.002
Nitrate-Nitrite as N mg/l	0.50	102	90-110	1.00	19-W3295	< 0.1	1.05	105	90-110	1.05	1.06	106	0.9	20	-	-	< 0.1
	0.50	102	90-110	1.00	19-W3333	< 0.1	0.89	89	90-110	0.89	0.89	89	0.0	20	-	-	< 0.1
pH units	-	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.8	7.8	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.8	7.9	-	1.3	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.2	8.2	-	0.0	20	-	-	-
Potassium - Dissolved mg/l	10.0	102	80-120	20.0	19W3297q	7.4	27.4	100	75-125	27.4	27.5	100	0.4	20	-	-	< 1

**Quality Control Report – Amended 7 Nov 19**

Lab IDs: 19-W3294 to 19-W3302

Project: MDU Lewis & Clark

Work Order: 201982-2358

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0	99	80-120	20.0	19W3237q	10.3	29.7	97	75-125	29.7	29.8	97	0.3	20	-	-	< 1
	10.0	100	80-120	20.0	19W3297q	7.2	26.6	97	75-125	26.6	26.9	98	1.1	20	-	-	< 1
	10.0	105	80-120												-	-	< 1
	10.0	104	80-120												-	-	< 1
Selenium - Dissolved mg/l	0.1000	102	80-120	0.100	19W3237q	< 0.005	0.1205	120	75-125	0.1205	0.1172	117	2.8	20	-	-	< 0.005
	0.0160	96	80-120	0.100	19W3297Q	< 0.005	0.1208	121	75-125	0.1208	0.1222	122	1.2	20	-	-	< 0.005
	0.1000	97	80-120	0.400	19-W3412Q	< 0.005	0.4056	101	75-125	0.4056	0.4448	111	9.2	20	-	-	< 0.005
				0.400	19W3288q	< 0.005	0.4234	106	75-125	0.4234	0.4104	103	3.1	20	-	-	< 0.005
Selenium - Total mg/l	0.1000	92	80-120	0.400	19W3299q	0.0612	0.4538	98	75-125	0.4538	0.4518	98	0.4	20	-	-	< 0.005
	0.1000	94	80-120	0.400	19W3288q	< 0.005	0.4234	106	75-125	0.4234	0.4104	103	3.1	20	-	-	< 0.005
Sodium - Dissolved mg/l	20.0	107	80-120	100	19W3297q	84.3	179	95	75-125	179	179	95	0.0	20	-	-	< 1
Sodium - Total mg/l	20.0	104	80-120	500	19W3237q	342	870	106	75-125	870	855	103	1.7	20	-	-	< 1
	20.0	103	80-120	100	19W3297q	82.9	174	91	75-125	174	176	93	1.1	20	-	-	< 1
	20.0	108	80-120												-	-	< 1
	20.0	106	80-120												-	-	< 1
Sulfate mg/l	100	102	80-120	500	19-W3241	820	1280	92	80-120	1280	1270	90	0.8	20	-	-	< 5
	100	100	80-120	1000	19-W3330	1200	2300	110	80-120	2300	2240	104	2.6	20	-	-	< 5
Thallium - Dissolved mg/l	0.1000	98	80-120	0.100	19W3237q	< 0.0005	0.0926	93	75-125	0.0926	0.0914	91	1.3	20	-	-	< 0.0005
	0.0160	97	80-120	0.100	19W3297Q	< 0.0005	0.0923	92	75-125	0.0923	0.0939	94	1.7	20	-	-	< 0.0005
				0.400	19W3288q	< 0.0005	0.4318	108	75-125	0.4318	0.4024	101	7.0	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	102	80-120	0.400	19W3299q	< 0.0005	0.3652	91	75-125	0.3652	0.3678	92	0.7	20	-	-	< 0.0005
	0.1000	90	80-120	0.100	19W3294q	< 0.0005	0.0926	93	75-125	0.0926	0.0914	91	1.3	20	-	-	< 0.0005
	0.1000	98	80-120	0.400	19D3458q	< 0.0005	0.4040	101	75-125	0.4040	0.4096	102	1.4	20	-	-	< 0.0005

**Quality Control Report – Amended 7 Nov 19**

Lab IDs: 19-W3294 to 19-W3302

Project: MDU Lewis & Clark

Work Order: 201982-2358

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Total Alkalinity mg/l CaCO3	410	93	90-110	410	19-D2739	769	1140	90	80-120	1140	1136	90	0.4	20	94	80-120	< 20
	410	95	90-110	410	19-W3296	350	719	90	80-120	719	723	91	0.6	20	-	-	< 20
	410	94	90-110	410	19-W3300	393	766	91	80-120	766	769	92	0.4	20	-	-	< 20
				410	19-W3334	255	631	92	80-120	631	628	91	0.5	20	-	-	< 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	1880	1920	-	2.1	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	1410	1360	-	3.6	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	958	894	-	6.9	20	-	-	< 10
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	12	11	-	8.7	20	-	-	< 2

Samples were received in good condition on 29 Aug 2019 at 0800.

Temperature upon receipt at the Bismarck laboratory was 4.2°C. Samples were received on ice and evidence of cooling had begun.

All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.

With the exception of pH, all holding times were met

Approved methodology was followed for all sample analyses.

All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/duplicates unless noted here.

- The recoveries for one fluoride matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
- The recoveries for one nitrate matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
- Field blank had a result at the reporting limit for total suspended solids. Due to the short hold time for TSS, no recheck was possible. Data was accepted since all QC for run was acceptable.

**Reporting**

- Per email from Barr, thallium (total) on sample 19-W3300 (MW117) was reanalyzed on 23 Oct 19 and the result was revised.

Approved by: C. Cantelero

7 Nov 19

## Claudette Carroll

---

**From:** Terri A. Olson <TOlson@barr.com>  
**Sent:** Monday, October 21, 2019 10:14 AM  
**To:** Claudette Carroll  
**Subject:** RE: Emailing: EFWEDD\_201982-2358.zip, 201982-2358.csv, 201982-2358.txt, 201982-2358 MDU L&C.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Claudette,

We would like the lab to check the total thallium result for MW117. It is quite different than previous results so want to confirm it is correct.

Thank-you,

Terri A. Olson  
Senior Data Quality Specialist  
Minneapolis, MN office: 952.842.3578  
TOlson@barr.com  
www.barr.com

This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering Co. and its clients and related parties in the course of business, and is intended solely for use by the addressees. This transmission contains information which may be confidential and proprietary. If you are not the addressee, note that any disclosure, copying, distribution, or use of the contents of this message (or any attachments, replies, or forwards) is prohibited. If you have received this transmission in error, please destroy it and notify us at 952-832-2600.

If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

-----Original Message-----

**From:** Claudette Carroll <ccarroll@mvtl.com>  
**Sent:** Wednesday, October 2, 2019 11:20 AM  
**To:** Barr Data Management <BarrDM@barr.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com>; 'Todd.Peterson@mdu.com' <Todd.Peterson@mdu.com>; Krebsbach, Abbie <Abbie.Krebsbach@mdu.com>  
**Subject:** Emailing: EFWEDD\_201982-2358.zip, 201982-2358.csv, 201982-2358.txt, 201982-2358 MDU L&C.pdf

**CAUTION:** This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hello again,

Here is another data package. Again hard copies to follow to Todd/Abbie.

Claudette

Your message is ready to be sent with the following file or link attachments:

[https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\\_201982-2358.zip&c=E,1,RGln3-iiYsVEHCV\\_W6xDw6tQAGe-gtOKddaaWn2opU26wj2NGdHeNc3jCx-2UGM6Xyh5qT\\_SMpU8m-mqCxyzsbed2PEKsjDgldg7kSHSfTEV\\_SLV-3V\\_&typo=1](https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD_201982-2358.zip&c=E,1,RGln3-iiYsVEHCV_W6xDw6tQAGe-gtOKddaaWn2opU26wj2NGdHeNc3jCx-2UGM6Xyh5qT_SMpU8m-mqCxyzsbed2PEKsjDgldg7kSHSfTEV_SLV-3V_&typo=1)

201982-2358.csv

201982-2358.txt

201982-2358 MDU L&C.pdf

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.





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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
www.mvtl.com



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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3337  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 27 Aug 19  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: Dup 1

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> <sub>50CTA</sub>

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Amended 7Nov19 (Radchem)

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3338  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 27 Aug 19  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: Field Blank (FB)

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll

CC  
7 NOV 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3339  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 27 Aug 19 10:15  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW103

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.30 units	NA	SM 4500 H+ B	27 Aug 19 10:15	JSM
Temperature - Field	13.4 Degrees C	NA	SM 2550B	27 Aug 19 10:15	JSM
Conductivity - Field	1427 umhos/cm	1	EPA 120.1	27 Aug 19 10:15	JSM
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll

<sup>CL</sup>  
5 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 2 Oct 19  
 Lab Number: 19-W3340  
 Work Order #: 82-2366  
 Account #: 002800  
 Date Sampled: 26 Aug 19 15:50  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW110

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.26 units	NA	SM 4500 H+ B	26 Aug 19 15:50	JSM
Temperature - Field	16.8 Degrees C	NA	SM 2550B	26 Aug 19 15:50	JSM
Conductivity - Field	1023 umhos/cm	1	EPA 120.1	26 Aug 19 15:50	JSM
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K Carroll*

*CL  
5 OCT 19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3341  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 26 Aug 19 12:35  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW119

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.27 units	NA	SM 4500 H+ B	26 Aug 19 12:35	JSM
Temperature - Field	15.9 Degrees C	NA	SM 2550B	26 Aug 19 12:35	JSM
Conductivity - Field	1108 umhos/cm	1	EPA 120.1	26 Aug 19 12:35	JSM
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K Carroll <sup>CL</sup> 50CT19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity † = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 2 Oct 19  
 Lab Number: 19-W3342  
 Work Order #: 82-2366  
 Account #: 002800  
 Date Sampled: 27 Aug 19 16:27  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTI Field Services

Project Name: MDU Lewis and Clark

Sample Description: MW111

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.17	units	NA	SM 4500 H+ B	27 Aug 19 16:27	JSM
Temperature - Field	15.0	Degrees C	NA	SM 2550B	27 Aug 19 16:27	JSM
Conductivity - Field	3757	umhos/cm	1	EPA 120.1	27 Aug 19 16:27	JSM
Radium 226	See Attached Report				30 Sep 19	OL
Radium 228	See Attached Report				28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K Carroll <sup>cc</sup> 5 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix                                 || = Due to concentration of other analytes  
 ! = Due to sample quantity                               + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3343  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 27 Aug 19 13:28  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW117

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.10	units	NA	SM 4500 H+ B	27 Aug 19 13:28	JSM
Temperature - Field	15.4	Degrees C	NA	SM 2550B	27 Aug 19 13:28	JSM
Conductivity - Field	8108	umhos/cm	1	EPA 120.1	27 Aug 19 13:28	JSM
Radium 226	See Attached Report				30 Sep 19	OL
Radium 228	See Attached Report				28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K Carroll*

*CL*  
*5 OCT 19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Todd Peterson  
Montana-Dakota Utilities Co.  
400 N 4th St  
Bismarck ND 58501

Report Date: 2 Oct 19  
Lab Number: 19-W3344  
Work Order #: 82-2366  
Account #: 002800  
Date Sampled: 28 Aug 19 9:10  
Date Received: 29 Aug 19 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW118

Temp at Receipt: 4.2C

	As Received Result	Units	Method RL	Method Reference	Date Analyzed	Time	Analyst
pH - Field	7.27	units	NA	SM 4500 H+ B	28 Aug 19	9:10	JSM
Temperature - Field	16.2	Degrees C	NA	SM 2550B	28 Aug 19	9:10	JSM
Conductivity - Field	1741	umhos/cm	1	EPA 120.1	28 Aug 19	9:10	JSM
Radium 226	See Attached Report				30 Sep 19		OL
Radium 228	See Attached Report				28 Sep 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K Carroll <sup>cc</sup> 5 OCT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

Todd Peterson  
 Montana-Dakota Utilities Co.  
 400 N 4th St  
 Bismarck ND 58501

Report Date: 2 Oct 19  
 Lab Number: 19-W3345  
 Work Order #: 82-2366  
 Account #: 002800  
 Date Sampled: 27 Aug 19 12:35  
 Date Received: 29 Aug 19 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

PO #: 175104 OP

Sample Description: MW120

Temp at Receipt: 4.2C

	As Received Result	Units	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.69	units	NA	SM 4500 H+ B	27 Aug 19 12:35	JSM
Temperature - Field	12.9	Degrees C	NA	SM 2550B	27 Aug 19 12:35	JSM
Conductivity - Field	7820	umhos/cm	1	EPA 120.1	27 Aug 19 12:35	JSM
Radium 226	See Attached Report				30 Sep 19	OL
Radium 228	See Attached Report				29 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll *CC*  
*SOCT19*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 : = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



Date: 11/4/2019

**CLIENT:** MVTL Laboratories, Inc.

**Project:** 201982-2366

**Lab Order:** S1909030

**CASE NARRATIVE**

**Report ID:** S1909030002

(Replaces S1909030001)

Samples 19-W3337 Dup 1, 19-W3338 Field Blank (FB), 19-W3339 MW103, 19-W3340 MW110, 19-W3341 MW119, 19-W3342 MW111, 19-W3343 MW117, 19-W3344 MW118 and 19-W3345 MW120 were received on September 4, 2019.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition

40 CFR Parts 136 and 141

40 CFR Part 50, Appendices B, J, L, and O

Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012

ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Report id\_S1909030002 will replace id\_S190930001 to correct and verify Ra226 value on Sample 002.

Reviewed by:

Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-001  
**ClientSample ID:** 19-W3337 Dup 1  
**COC:**  
**PWS ID:**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

**Radionuclides - Total**

Radium 226	2.1	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1234 WN
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	09/30/2019 1234 WN
Radium 228	0.0	pCi/L		2	Ga-Tech	09/28/2019 112 WN
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	09/28/2019 112 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Jessica Nixon  
Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-002  
**ClientSample ID:** 19-W3338 Field Blank (FB)  
**COC:**  
**PWS ID:**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

**Radionuclides - Total**

Radium 226	0.11	pCi/L		0.2	SM 7500 Ra-B	10/29/2019 911	WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/29/2019 911	WN
Radium 228	0.1	pCi/L		2	Ga-Tech	09/28/2019 415	WN
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	09/28/2019 415	WN

These results apply only to the samples tested.

**RL - Reporting Limit**

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-003  
**ClientSample ID:** 19-W3339 MW103  
**COC:**  
**PWS ID:**  
**Comments**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019 10:15:00 AM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

**Radionuclides - Total**

Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1234 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1234 WN
Radium 228	0.7	pCi/L		2	Ga-Tech	09/28/2019 718 WN
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	09/28/2019 718 WN

These results apply only to the samples tested.

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Jessica Nixon  
Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-004  
**ClientSample ID:** 19-W3340 MW110  
**COC:**  
**PWS ID:**  
**Comments**

**WorkOrder:** S1909030  
**CollectionDate:** 8/26/2019 3:50:00 PM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.6	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1234 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1234 WN
Radium 228	-8.8	pCi/L		2	Ga-Tech	09/28/2019 1021 WN
Radium 228 Precision (±)	3.0	pCi/L			Ga-Tech	09/28/2019 1021 WN

These results apply only to the samples tested.

**RL - Reporting Limit**

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: Jessica Nixon  
Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-005  
**ClientSample ID:** 19-W3341 MW119  
**COC:**  
**PWS ID:**  
**Comments**

**WorkOrder:** S1909030  
**CollectionDate:** 8/26/2019 12:35:00 PM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.16	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1440 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1440 WN
Radium 228	-0.5	pCi/L		2	Ga-Tech	09/28/2019 1324 WN
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	09/28/2019 1324 WN

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-006  
**ClientSample ID:** 19-W3342 MW111  
**COC:**  
**PWS ID:**  
**Comments**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019 4:27:00 PM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1440 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1440 WN
Radium 228	-1.5	pCi/L		2	Ga-Tech	09/28/2019 1627 WN
Radium 228 Precision (±)	2.5	pCi/L			Ga-Tech	09/28/2019 1627 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager





Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-007  
**ClientSample ID:** 19-W3343 MW117  
**COC:**  
**PWS ID:**  
**Comments**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019 1:28:00 PM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1440 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1440 WN
Radium 228	-0.7	pCi/L		2	Ga-Tech	09/28/2019 1930 WN
Radium 228 Precision (±)	2.6	pCi/L			Ga-Tech	09/28/2019 1930 WN

These results apply only to the samples tested.

RL - Reporting Limit

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-008  
**ClientSample ID:** 19-W3344 MW118  
**COC:**  
**PWS ID:**

**WorkOrder:** S1909030  
**CollectionDate:** 8/28/2019 9:10:00 AM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1440 WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/30/2019 1440 WN
Radium 228	0.5	pCi/L		2	Ga-Tech	09/28/2019 2233 WN
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	09/28/2019 2233 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager



Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 11/4/2019  
**Report ID** S1909030002  
(Replaces S1909030001)

**ProjectName:** 201982-2366  
**Lab ID:** S1909030-009  
**ClientSample ID:** 19-W3345 MW120  
**COC:**  
**PWS ID:**

**WorkOrder:** S1909030  
**CollectionDate:** 8/27/2019 12:38:00 PM  
**DateReceived:** 9/4/2019 1:30:00 PM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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**Radionuclides - Total**

Radium 226	7.0	pCi/L		0.2	SM 7500 Ra-B	09/30/2019 1440 WN
Radium 226 Precision (±)	0.3	pCi/L			SM 7500 Ra-B	09/30/2019 1440 WN
Radium 228	-7.0	pCi/L		2	Ga-Tech	09/29/2019 136 WN
Radium 228 Precision (±)	2.7	pCi/L			Ga-Tech	09/29/2019 136 WN

**These results apply only to the samples tested.**

**RL - Reporting Limit**

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - L Analyzed by another laboratory
  - ND Not Detected at the Reporting Limit
  - S Spike Recovery outside accepted recovery limits
  - X Matrix Effect

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager

**ANALYTICAL QC SUMMARY REPORT****CLIENT:** MVTL Laboratories, Inc.**Date:** 11/4/2019**Work Order:** S1909030**Report ID:** S1909030002**Project:** 201982-2366

(Replaces S1909030001)

**Radium 228 by Ga/Tech**Sample Type **MBLK**

Units: pCi/L

MB-594 (09/26/19 08:36)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228

ND 1

**Radium 228 by Ga/Tech**Sample Type **LCS**

Units: pCi/L

LCS-594 (09/26/19 11:39)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228

15 1 13.6 112 65.9 - 132

**Radium 228 by Ga/Tech**Sample Type **MS**

Units: pCi/L

MS-594 (09/26/19 17:45)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228

14 1 13.6 ND 105 50 - 139

MS-594 (09/26/19 17:45)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 228 (Dissolved)

14 1 13.6 ND 105 50 - 139

**Radium 228 by Ga/Tech**Sample Type **MSD**

Units: pCi/L

MSD-594 (09/26/19 20:48)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Conc %RPD %REC % RPD Limits Qual	

Total Radium 228

15 1 14 6.19 111 20

MSD-594 (09/26/19 20:48)	RunNo: 172087	PrepDate: 09/10/19 0:00	BatchID 16539	
Analyte	Result	RL	Conc %RPD %REC % RPD Limits Qual	

Radium 228 (Dissolved)

15 1 14 6.19 111 20

**Radium 226 in Water -**Sample Type **MBLK**

Units: pCi/L

MB-2057 (09/30/19 12:31)	RunNo: 172138	PrepDate: 09/25/19 0:00	BatchID 16584	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226

ND 0.2

**Radium 226 in Water -**Sample Type **LCS**

Units: pCi/L

LCS-2057 (09/30/19 12:31)	RunNo: 172138	PrepDate: 09/25/19 0:00	BatchID 16584	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226

6.5 0.2 6.94 93.7 67.1 - 122

**Radium 226 in Water -**Sample Type **MS**

Units: pCi/L

MS-2057 (09/30/19 12:31)	RunNo: 172138	PrepDate: 09/25/19 0:00	BatchID 16584	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226

6.4 0.2 6.94 ND 92.8 65 - 131

**Radium 226 in Water -**Sample Type **MSD**

Units: pCi/L

MSD-2057 (09/30/19 12:31)	RunNo: 172138	PrepDate: 09/25/19 0:00	BatchID 16584	
Analyte	Result	RL	Conc %RPD %REC % RPD Limits Qual	

Radium 226

6.1 0.2 6.4 5.38 88.0 20

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	E Value above quantitation range
	G Analyzed at IML Gillette laboratory	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	L Analyzed by another laboratory
	ND Not Detected at the Reporting Limit	O Outside the Range of Dilutions
	R RPD outside accepted recovery limits	S Spike Recovery outside accepted recovery limits
	X Matrix Effect	



**LABORATORIES, Inc.**

2616 E Broadway Ave  
Bismarck, ND 58501

Phone: (701) 258-9720

Toll Free: (800) 279-6885

Fax: (701) 258-9724

**Chain of Custody Record**

201982-2366

**Company Name and Address:**  
MVTI  
2616 E Broadway  
Bismarck, ND 58501

**Billing Address (indicate if different from above):**  
PO Box 249  
New Ulm, MN 56073

**Account #:**  
**Contact:** Claudette  
**Name of Sampler:**  
**Quote Number:**  
**Project Name/Number:**

**Phone #:** 701-258-9720  
**Fax #:** For faxed report check box  
**E-mail:** ccarroll@mvti.com For e-mail report check box  
**Date Submitted:** 30-Aug-19  
**Purchase Order #:** BL6219

Sample Information						Bottle Type					Analysis
IML Lab Number	MVTI Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials Unpreserved	Glass Jar	Other	Analysis Required
51909030											
001	19-W3337	Dup 1	GW	27-Aug-19	NA	4					Ra226 & Ra228
002	19-W3338	Field Blank (FB)	GW	27-Aug-19	NA	4					Ra226 & Ra228
003	19-W3339	MW103	GW	27-Aug-19	1015	4					Ra226 & Ra228
004	19-W3340	MW110	GW	26-Aug-19	1550	4					Ra226 & Ra228
005	19-W3341	MW119	GW	26-Aug-19	1235	4					Ra226 & Ra228
006	19-W3342	MW111	GW	27-Aug-19	1627	4					Ra226 & Ra228
007	19-W3343	MW117	GW	27-Aug-19	1328	4					Ra226 & Ra228
008	19-W3344	MW118	GW	28-Aug-19	910	4					Ra226 & Ra228
009	19-W3345	MW120	GW	27-Aug-19	1235	4					Ra226 & Ra228

All results must be reported as a numerical value

2 coolers

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
Nathan Buchmann	30-Aug-19	1700	Intact	Kathy Boyo	9.4.19	13:30
2.						20.8



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: August 2019  
 Sample ID: 103  
 Sampling Personal: Jerry Ryan

Weather Conditions: Temp: 65 °F Wind: W @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<u>No</u>	
Well Labeled?	<u>Yes</u>	No	
Casing Straight?	<u>Yes</u>	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	10.40 ft		
Depth to Top of Pump:	— ft		
Water Level After Sample:	10.38 ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	<u>No</u>	
Duplicate Sample?:	<u>Yes</u>	No	
Duplicate Sample ID:	Dup 1		
Purge Date:	27 Aug 19	Time Purging Began:	0730 am/pm
Well Purged Dry?	Yes	<u>No</u>	Time Purged Dry: — am/pm
Sample Date:	27 Aug 19	Time of Sampling:	1015 am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4-1L Raw		

Control Settings	
Purge:	5 sec.
Recover:	55 sec.
PSI:	15

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
											1
2	0805	13.17	1487	7.29	10.26	164.4	35.9	10.38	100.0	3000.0	Clear
3	0835	13.43	1454	7.26	5.64	148.2	19.3	10.38	100.0	3000.0	Clear
4	0905	12.59	1440	7.27	4.65	45.5	9.89	10.37	100.0	3000.0	Clear
5	0925	13.64	1437	7.26	4.66	18.0	8.58	10.38	100.0	2000.0	Clear
6	0945	13.75	1431	7.29	4.53	3.8	5.80	10.38	100.0	2000.0	Clear
7	1005	13.38	1428	7.29	4.79	-5.6	4.70	10.38	100.0	2000.0	Clear
8	1010	13.41	1427	7.29	4.51	-8.3	4.47	10.38	100.0	500.0	Clear
9	1015	13.39	1427	7.30	4.50	-9.1	4.53	10.37	100.0	500.0	Clear
10											

Stabilized: Yes No

Total Volume Removed: 16,500.0 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark

Event: August 2019

Sample ID: 110

Sampling Personal: Jerry Plyn

Weather Conditions: Temp: 75 °F Wind: W @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	8.87	ft
Depth to Top of Pump:	14.21	ft
Water Level After Sample:	9.01	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Duplicate Sample ID:	—		
Purge Date:	26 Aug 19	Time Purging Began:	1330 am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	26 Aug 19	Time of Sampling:	1550 am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4 - 1L Nitric		

Control Settings	
Purge:	5 sec.
Recover:	55 sec.
PSI:	10

### Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
SEQ #	Time										
1	1335	17.54	1056	7.31	4.90	111.4	52.5	8.93	100.0	500.0	Clear
2	1405	16.05	1028	7.19	5.51	57.6	26.7	8.93	100.0	3000.0	Clear
3	1435	15.08	1022	7.19	5.55	65.5	27.8	8.91	100.0	3000.0	Clear
4	1505	15.93	1026	7.23	6.03	69.9	21.3	8.92	100.0	3000.0	Clear
5	1535	16.09	1024	7.27	8.12	162.2	20.6	9.02	100.0	3000.0	Clear
6	1540	16.28	1022	7.26	7.36	164.4	24.5	8.99	100.0	500.0	Clear
7	1545	16.52	1023	7.26	7.48	164.9	17.8	8.97	100.0	500.0	Clear
8	1550	16.80	1023	7.26	7.47	166.1	19.6	8.99	100.0	500.0	Clear
9											
10											

Stabilized:  Yes  No

Total Volume Removed: 14,000.0 mL

Comments:

Turbidity <sup>did</sup> not decrease below 5 NTU after 3 well volumes of water were removed. Continued until stabilization parameters were met. then collected sample



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: August 2019  
 Sample ID: 119  
 Sampling Personal: *Jeff Meyer*

Weather Conditions: Temp: 70 °F Wind: W @ 5-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	8.71	ft
Depth to Top of Pump:	_____ ft	
Water Level After Sample:	8.76	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample ID:	-		
Purge Date:	26 Aug 19	Time Purging Began:	1055 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	Time Purged Dry:	- am/pm
Sample Date:	26 Aug 19	Time of Sampling:	1235 am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4-L Nitric		

Control Settings	
Purge:	5 sec.
Recover:	55 sec.
PSI:	10

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
											1
2	1130	18.31	1104	7.27	5.97	72.8	47.4	8.74	100.0	3000.0	Clear
3	1200	16.09	1104	7.28	4.13	72.1	11.0	8.85	100.0	3000.0	Clear
4	1220	15.92	1108	7.28	3.97	72.6	2.87	8.87	100.0	2000.0	Clear
5	1230	15.87	1113	7.28	3.88	73.8	2.84	8.88	100.0	1000.0	Clear
6	1235	15.91	1108	7.27	3.83	74.6	2.69	8.78	100.0	500.0	Clear
7											
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 10,000.0 mL

Comments:





# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND  
Phone: (701) 258-9720

Company: MDU Lewis and Clark  
Event: August 2019  
Sample ID: \_\_\_\_\_  
Sampling Personal: Jeremy Moya

Weather Conditions: Temp: 70 °F Wind: W @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>7.74</u>	ft
Depth to Top of Pump:	<u>—</u> ft	
Water Level After Sample:	<u>7.72</u>	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder			
Sampling Method:	Bladder			
Dedicated Equip?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Duplicate Sample ID:	<u>—</u>			
Purge Date:		<u>27 Aug 19</u>	Time Purging Began:	<u>1432</u> am <input checked="" type="checkbox"/>
Well Purged Dry?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Time Purged Dry: <u>—</u> am/pm
Sample Date:		<u>27 Aug 19</u>	Time of Sampling:	<u>1627</u> am <input checked="" type="checkbox"/>
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered)	250 Sulfuric
	<u>4-1L Nitric</u>			

Control Settings		
Purge:	<u>5</u>	sec.
Recover:	<u>55</u>	sec.
PSI:	<u>10</u>	

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description:
											Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
1	1437	15.99	4824	6.98	9.56	159.6	34.6	7.73	100.0	500.0	Clear
2	1507	14.74	3816	7.08	9.28	192.0	28.8	7.80	100.0	3000.0	Clear
3	1537	15.21	3731	7.11	9.82	89.9	11.7	7.78	100.0	3000.0	Clear
4	1607	15.29	3734	7.14	11.20	63.8	4.19	7.79	100.0	3000.0	Clear
5	1617	15.07	3737	7.16	11.43	64.6	3.06	7.79	100.0	1000.0	Clear
6	1622	15.29	3751	7.16	11.52	64.7	2.91	7.79	100.0	500.0	Clear
7	1627	14.96	3757	7.17	11.71	65.8	2.87	7.79	100.0	500.0	Clear
8											
9											
10											

Stabilized:  Yes  No

Total Volume Removed: 11,500.0 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: August 2019  
 Sample ID: 117  
 Sampling Personal: Jerry Meyer

Weather Conditions: Temp: 70 °F Wind: W @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Casing Straight?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	5.38	ft
Depth to Top of Pump:	9.77	ft
Water Level After Sample:	9.10	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Duplicate Sample ID:	—		
Purge Date:	26 Aug 19	Time Purging Began:	0921 am/pm
Well Purged Dry?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Time Purged Dry:	1036 am/pm
Sample Date:	27 Aug 19	Time of Sampling:	1328 am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4-14 Nitric		

Control Settings	
Purge:	5 sec.
Recover:	55 sec.
PSI:	10

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid	
1	0926	15.07	7792	6.40	12.05	215.6	75.1	5.89	150.0	750.0	Clear
2	0946	15.31	7717	7.04	14.37	195.3	44.9	7.30	150.0	3000.0	Clear
3	0956	15.44	7741	7.06	13.78	118.1	29.7	8.00	150.0	1500.0	Clear
4	1006	15.68	7720	7.05	14.19	110.4	21.5	8.35	150.0	1500.0	Clear
5	1016	15.80	7693	7.04	16.49	103.3	30.1	8.94	150.0	1500.0	Clear
6	1026	15.95	7671	7.06	14.39	81.5	22.7	9.32	150.0	1500.0	Clear
7	1036	16.05	7637	7.07	13.97	71.2	147.0	Below Pump	150.0	1500.0	Clear
8	1323	Purged well for 5 min to clear the line									
9	1323						5.81	100.0	500.0		
10	1328	15.36	8108	7.10	10.69	138.9	7.06	—	—	—	Clear

Total Volume Removed: 11,250.0 mL

Stabilized: Yes  No

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: August 2019  
 Sample ID: 118  
 Sampling Personal: [Signature]

Weather Conditions: Temp: 65 °F Wind: 5 @ 5-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	8.32 ft	
Depth to Top of Pump:	— ft	
Water Level After Sample:	8.39 ft	
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample ID:	—		
Control Settings			
Purge:	5	sec.	
Recover:	55	sec.	
PSI:	10		
Purge Date:	28 Aug 19	Time Purging Began:	0745 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	28 Aug 19	Time of Sampling:	0910 am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	4-1L Nitric		

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid	
1	0750	13.37	1867	7.39	8.44	182.9	278.0	8.38	100.0	500	Slightly Turbid
2	0820	15.06	1746	7.31	10.50	106.6	59.7	8.40	100.0	3000.0	Clear
3	0850	15.76	1741	7.26	8.12	63.1	4.27	8.35	100.0	3000.0	Clear
4	0900	15.99	1741	7.28	7.85	58.3	2.95	8.40	100.0	1000.0	Clear
5	0905	15.97	1741	7.28	8.03	62.9	2.94	8.39	100.0	500.0	Clear
6	0910	16.22	1741	7.27	8.11	61.2	2.90	8.40	100.0	500.0	Clear
7											
8											
9											
10											

Stabilized: Yes No

Total Volume Removed: 8500.0 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Lewis and Clark  
 Event: August 2019  
 Sample ID: 120  
 Sampling Personal: Jeremy Meyer

Weather Conditions: Temp: 70 °F Wind: W @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>15.35</u> ft		
Depth to Top of Pump:	<u>—</u> ft		
Water Level After Sample:	<u>15.85</u> ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Duplicate Sample ID:	<u>—</u>		
Purge Date:	<u>27 Aug 19</u>	Time Purging Began:	<u>1150</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>27 Aug 19</u>	Time of Sampling:	<u>1235</u> am/pm
Bottle List:	1L Raw	500mL Nitric	500mL Nitric (filtered) 250 Sulfuric
	<u>4 - 1L Nitric</u>		

Control Settings	
Purge:	<u>5</u> sec.
Recover:	<u>55</u> sec.
PSI:	<u>20</u>

### Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate ml/min	mL Removed	Description: Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid
											1
2	<u>1225</u>	<u>12.81</u>	<u>7748</u>	<u>6.68</u>	<u>7.98</u>	<u>12.9</u>	<u>0.96</u>	<u>15.75</u>	<u>100.0</u>	<u>3000.0</u>	<u>Clear</u>
3	<u>1230</u>	<u>12.69</u>	<u>7774</u>	<u>6.69</u>	<u>8.23</u>	<u>11.0</u>	<u>0.94</u>	<u>15.81</u>	<u>100.0</u>	<u>500.0</u>	<u>Clear</u>
4	<u>1235</u>	<u>12.90</u>	<u>7820</u>	<u>6.69</u>	<u>8.56</u>	<u>7.1</u>	<u>1.05</u>	<u>15.78</u>	<u>100.0</u>	<u>500.0</u>	<u>Clear</u>
5											
6											
7											
8											
9											
10											

Stabilized: Yes  No

Total Volume Removed: 4500.0 mL

Comments:



# Laboratories, Inc.

2616 E. Broadway  
Bismarck, ND 58501  
Phone (701) 258-9720

# Chain of Custody Record

<b>Project Name:</b> MDU Lewis and Clark	<b>Event:</b> August 2019	<b>Work Order Number:</b> 82-2366
<b>Report To:</b> MDU Attn: Abbie Krebsbach Address: 400 N. 4th St. Bismarck, ND 58501 phone: 701-222-7844	<b>Carbon Copy:</b> Attn: Address:	<b>Name of Sampler(s):</b> 

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type							Field Parameters			Analysis Required	
					1 liter Nitric								Temp (°C)	Spec. Cond.		pH
W3337	Dup 1	27 Aug 19	NA	GW	4								NA	NA	NA	Rad 226 and 228
W3338	Field Blank (FB)	27 Aug 19	NA	GW	4								NA	NA	NA	
W3339	MW103	27 Aug 19	1015	GW	4								13.39	1427	7.30	
W3340	MW110	26 Aug 19	1550	GW	4								16.80	1023	7.26	
W3341	MW119	26 Aug 19	1235	GW	4								15.91	1108	7.27	
W3342	MW111	27 Aug 19	1627	GW	4								14.96	3757	7.17	
W3343	MW117	27 Aug 19	1328	GW	4								15.36	8108	7.10	
W3344	MW118	28 Aug 19	0910	GW	4								16.22	1741	7.27	
W3345	MW120	27 Aug 19	1235	GW	4								12.90	7820	6.69	

Comments:

<b>Relinquished By:</b>		<b>Sample Condition:</b>	
Name:	Date/Time	Location:	Temp (°C)
	28 Aug 19 1940	Log In Walk In #2	ROT 4.2 TM562 / TM805

WJ 29 Aug 2019

<b>Received by:</b>	
Name:	Date/Time
	29 Aug 2019 0800

## Claudette Carroll

---

**From:** Terri A. Olson <TOlson@barr.com>  
**Sent:** Tuesday, October 15, 2019 2:11 PM  
**To:** Claudette Carroll  
**Subject:** RE: Emailing: 201982-2366 MDU.pdf, EFWEDD\_201982-2366.zip, 201982-2366.csv, 201882-2366.txt

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Claudette,

For report 201982-2366, we would like you to have IML check the result for the field blank. It has the second highest result of all the samples in this report which is odd.

Thank-you,

Terri A. Olson  
Senior Data Quality Specialist  
Minneapolis, MN office: 952.842.3578  
TOlson@barr.com  
www.barr.com

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If you no longer wish to receive marketing e-mails from Barr, respond to [communications@barr.com](mailto:communications@barr.com) and we will be happy to honor your request.

-----Original Message-----

**From:** Claudette Carroll <ccarroll@mvtl.com>  
**Sent:** Monday, October 7, 2019 12:23 PM  
**To:** Barr Data Management <BarrDM@barr.com>; 'Todd.Peterson@mdu.com' <Todd.Peterson@mdu.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com>; Krebsbach, Abbie <Abbie.Krebsbach@mdu.com>  
**Subject:** Emailing: 201982-2366 MDU.pdf, EFWEDD\_201982-2366.zip, 201982-2366.csv, 201882-2366.txt

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

Attached is a data package for the recent sampling done at MDU Lewis & Clark. Hard copies to follow in the mail.

Let me know if you have any questions.

Have a good rest of your day,

Claudette

ccarroll@mvtl.com  
701-258-9720  
2616 E. Broadway Ave/Bismarck, ND 58501

Your message is ready to be sent with the following file or link attachments:

201982-2366 MDU.pdf

[https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\\_201982-2366.zip&c=E,1,j68zK-ZfraG0i6-0u57ZGRuTV-YG-b6O0gB7rRo43aq6-qmJYsH1ylCBsiPk\\_uCdgGC7hY-tYmj3YozGB7iEbhARRDPjpZQ6ic5ewmXsA6nChCTy&typo=1](https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD_201982-2366.zip&c=E,1,j68zK-ZfraG0i6-0u57ZGRuTV-YG-b6O0gB7rRo43aq6-qmJYsH1ylCBsiPk_uCdgGC7hY-tYmj3YozGB7iEbhARRDPjpZQ6ic5ewmXsA6nChCTy&typo=1)

201982-2366.csv

201882-2366.txt

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

## Appendix B

### Montana-Dakota Utilities Co., Lewis & Clark Station, Assessment of Corrective Action Extension

Appendix B Montana-Dakota Utilities Co., Lewis & Clark Station, Assessment of Corrective  
Action Extension



## Memorandum

**To:** Sam Davies, Environmental Scientist  
**From:** Paul Swenson  
**Subject:** Montana-Dakota Utilities Co., Lewis & Clark Station,  
Assessment of Corrective Action Extension  
**Date:** June 28, 2019  
**Project:** 26411007

An assessment of corrective measures (ACM) is in progress at Lewis & Clark Station, owned by Montana-Dakota Utilities Company (MDU), located near Sidney, Montana. The ACM is being developed in compliance with 40 CFR § 257 Subpart D, Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (CCR Rule).

An alternative source demonstration (ASD) was undertaken after lithium and selenium were detected at statistically significant concentrations above applicable ground water protection standards (GWPS) in the initial and resample assessment monitoring events. The ACM was initiated on April 1, 2019, following an unsuccessful conclusion of the ASD effort. According to § 257.96 of the CCR Rule, the ACM may be extended by up to 60 days based on a demonstration of need for additional time to complete the assessment due to site-specific conditions or circumstances.

As the qualified professional engineer (QPE) preparing the ACM, I have determined that additional investigation is needed to better understand plume flow direction in the vicinity of Irrigation Ditch 12 and the north property line to provide an adequate, complete basis for the ACM. Recent work at the facility indicated a need to refine our understanding of the water table in this area. Groundwater flow direction, which is largely driven by the water table piezometric surface, governs the direction of plume migration. The area where the water table is not adequately understood is identified on Figure 1 (attached). Proper definition and assessment of potential corrective measures relies on a thorough understanding of plume migration direction downgradient of the facility, including in this area.

Additionally, understanding whether the ditch is gaining flow from groundwater or losing flow to groundwater in the eastern portion of the site also may affect assessment of corrective measures. A remedy that may be suitable for conditions assuming the ditch is gaining (i.e., groundwater from the site is discharging into the ditch) may not be suitable for conditions assuming the ditch is losing (i.e., water is seeping from the bottom of the ditch and combining with groundwater from the site that is flowing below the ditch).

Piezometers will be installed in the area where definition of the water table needs to be improved to gather more data. Additional time beyond the time allowed to complete the ACM is needed to

**To:** Sam Davies, Environmental Scientist  
**From:** Paul Swenson  
**Subject:** Montana-Dakota Utilities Co., Lewis & Clark Station,  
Assessment of Corrective Action Extension  
**Date:** June 28, 2019  
**Page:** 2

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accommodate driller availability and to collect several rounds of water levels to better understand hydrogeologic conditions in this area. The schedule to install the piezometers and incorporate the findings into the ACM is estimated in the following milestone dates:

- |  |                 |
|--|-----------------|
| 1. Install piezometers complete  | June 28, 2019   |
| 2. Collect three sets of water levels                                  | July 19, 2019   |
| 3. Incorporate findings into groundwater modeling and finalize the ACM | August 29, 2019 |

It is my opinion that a 60-day extension is needed to collect additional data, and to understand impacts of the new data in context of other site information, to complete the ACM.

I hereby certify that the demonstration for a 60-day extension for completion of the assessment of corrective actions as specified in paragraph 40 CFR § 257.96(a) is accurate, and that I am a duly licensed professional engineer under the laws of the State of Montana.

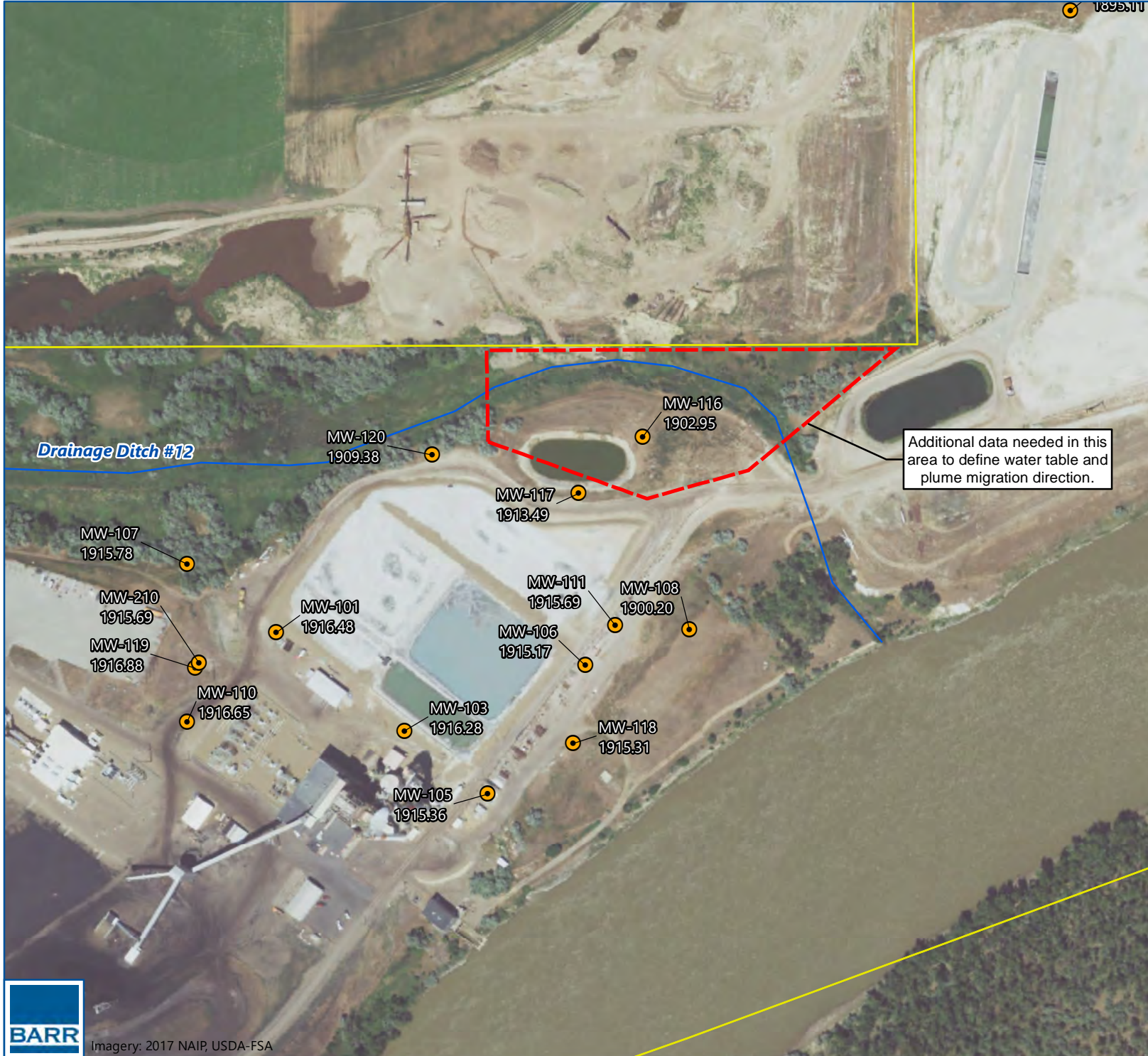



A handwritten signature in cursive script that reads "Paul T. Swenson".

---

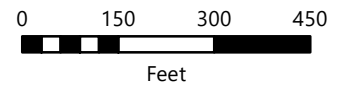
Paul T. Swenson  
Barr Engineering Co.  
MT License Number 12805PE

Dated this 28<sup>th</sup> day of June, 2019



-  Investigation Area
-  Monitoring Well Location
-  Parcel Boundary

Additional data needed in this area to define water table and plume migration direction.



INVESTIGATION AREA  
Lewis & Clark Station  
Montana-Dakota Utilities Co.



FIGURE 1