



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2016
Sample ID: NW 3-90
Sampling Personal: Darren Nicksaag

Weather Conditions: Temp: 27 °F Wind: Light 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>19.55</u>	ft	
Total Well Depth:	<u>—</u>	ft	
Well Volume:	<u>—</u>	liters	
Depth to Top of Pump:	<u>20.16</u>	ft	
Water Level After Sample:	<u>19.63</u>	ft	
Measurement Method:	<u>Electric Water Level Indicator</u>		

Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings	
Sampling Method:	<u>Bladder</u>	Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes No	Recover:	<u>55</u> sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No	PSI:	<u>—</u>
Duplicate Sample ID:	<u>—</u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>12 Oct 16</u>	Time Purging Began:	<u>0947</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>12 Oct 16</u>	Time of Sampling:	<u>1012</u> am/pm
Bottle List:	<u>CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</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	mL Removed	Description: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	0952	8.08	5287	6.80	2.82	-34.1	2.02	19.73	500	<u>cl</u>
2	0957	7.55	5295	6.80	2.80	-18.5	0.95	19.68	500	<u>cl</u>
3	1002	7.87	5297	6.79	2.83	-14.4	0.72	19.65	500	<u>cl</u>
4	1007	7.58	5299	6.79	2.81	-8.8	0.66	19.62	500	<u>cl</u>
5	1012	7.60	5289	6.79	2.85	-4.5	0.68	19.64	500	<u>cl</u>
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments: —

Total Volume Removed: 2500 mL



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2016
 Sample ID: 104
 Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 50 °F Wind: Light 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:	14.46	ft	
Total Well Depth:		ft	
Well Volume:		liters	
Depth to Top of Pump:	22.15	ft	
Water Level After Sample:	14.67	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI:	
Duplicate Sample ID:		Pumping Rate:	100 mL/min
Purge Date:	13 Oct 16	Time Purging Began:	1250 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	
Sample Date:	13 Oct 16	Time of Sampling:	1315 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	1255	10.83	14285	6.91	5.30	74.7	1.29	14.59	500	clear
2	1300	10.54	14313	6.89	4.26	71.8	2.50	14.64	500	cl
3	1305	10.55	14283	6.90	3.95	70.7	1.70	14.65	500	cl
4	1310	10.65	14279	6.89	3.73	76.4	1.64	14.67	500	cl
5	1315	10.56	14302	6.89	3.72	70.3	1.61	14.67	500	cl
6										
7										
8										
9										
10										

Stabilized: Yes No

Comments:

Total Volume Removed: 2500 mL

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darren McElroy

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration

Date: 13 Oct 16 Time: 0711

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH						
Buffer 7	<u>16.15</u>	<u>6.97</u>	<u>7.00</u>	6.95-7.05	<u>-47.3</u>	0 +/- 50
Buffer 10	<u>16.32</u>	<u>10.08</u>	<u>10.01</u>	9.95-10.05	<u>-225.1</u>	-180 +/- 50
Conductivity						Check
Buffer 10000	<u>16.12</u>	<u>10038</u>	<u>10007</u>	±10%	Buffer 5000	<u>4980</u>
ORP						
231 mV @ 25C	<u>16.24</u>	<u>232.9</u>	<u>231.0</u>	±10 mV		
DO						
	<u>16.61</u>	<u>7.52</u>	<u>9.02</u>	Barometric Pressure (mm Hg)		
				mg/L	<u>713.7</u>	

Post-Site Check

Time: 1330

	Temp °C	Reading
pH		
Buffer 7	<u>14.50</u>	<u>6.97</u>
Conductivity		
Buffer 5000	<u>12.77</u>	<u>4975</u>

Date: _____ Time: _____

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH						
Buffer 7				6.95-7.05		0 +/- 50
Buffer 10				9.95-10.05		-180 +/- 50
Conductivity						Check
Buffer 10000				±10%	Buffer 5000	
ORP						
231 mV @ 25C				±10 mV		
DO						
				Barometric Pressure (mm Hg)		
				mg/L		

Time: _____

	Temp °C	Reading
pH		
Buffer 7		
Conductivity		
Buffer 5000		



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett CCR Groundwater October 2016				Name of Sampler(s): <i>Jeremy Myers / Darren Nierwag</i>			
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829				Carbon Copy: Attn: Address:			
				Work Order Number: <i>88-3373</i>			

Sample Information					Bottle Type				Field Parameters			Analysis Required
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO ₃	1 liter	500 ml HNO ₃ (filtered)	Field Temperature °C	Field Spec. Cond.	Field pH	
W4715	Field Blank (FB)	12 Oct 16	NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W4716	Dupl	12 Oct 16	NA	W		X	X	X	NA	NA	NA	
W4717	MW101	12 Oct 16	1555	GW		X	X	X	9.12	4690	6.76	
W4718	MW102	12 Oct 16	1141	GW		X	X	X	8.82	7677	6.86	
W4719	MW103	12 Oct 16	0942	GW		X	X	X	7.83	4871	6.74	
W4720	MW4R	12 Oct 16	0807	GW		X	X	X	7.52	8838	6.58	
W4721	MW70	12 Oct 16	1347	GW		X	X	X	8.32	3932	7.01	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>[Signature]</i>	Log in	13 Oct 16 1430	<i>[Signature]</i>		13 Oct 2016 1430	6.3°C ROI TMS88
2							
3							



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Bismarck, ND 58501
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Chain of Custody Record

Project Name: MDU Heskett CCR Groundwater October 2016				Name of Sampler(s): <i>Samplers: Darren Nieswong</i>				
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			Carbon Copy: Attn: Address:			Work Order Number: <i>82-3373</i>		

Sample Information					Bottle Type			Field Parameters			Analysis Required	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO ₃	1 liter	500 ml HNO ₃ (filtered)	Field Temperature °C	Field Spec. Cond.		Field pH
W4722	Field Blank (FB)2	13 Oct 16	NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W4723	Dup 2	13 Oct 16	NA	W		X	X	X	NA	NA	NA	
W4724	MW13	13 Oct 16	0813	GW		X	X	X	7.39	10508	6.86	
W4725	* MW8R MW8OR	13 Oct 16	0952	GW		X	X	X	9.38	5683	7.12	
W4726	MW105	13 Oct 16	1157	GW		X	X	X	8.85	7202	6.77	
W4727	MW33	13 Oct 16	0845	GW		X	X	X	7.32	5399	6.50	
W4728	MW 2-90	13 Oct 16	1149	GW		X	X	X	8.29	7601	6.87	
W4729	MW 3-90 *	13 Oct 16	1012	GW		X	X	X	7.60	5289	6.79	
W4730	MW 104	13 Oct 16	1315	GW		X	X	X	10.56	14302	6.89	

Comments: * 13 Oct 16 AM

* Amended 18 NOV 16 /cc

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>[Signature]</i>	Leg in	13 Oct 16 1430	<i>[Signature]</i>		15 Oct 2016 1430	10.3°C ROP TMSB
2							
3							



CASE NARRATIVE – AMENDED 13 DECEMBER 16 (SELENIUM QUALIFIERS)

MVTL Lab Reference No/SDG: 201682-3373
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR October 2016
MVTL Laboratory Identifications: 16-W4715 through 16-W4730
Page 1 of 2

Table with 2 columns: MDU Sample Identification and MVTL Laboratory #. Rows include Field Blank (FB) 1, Dup 1, MW101, MW102, MW103, MW44R, MW70, Field Blank (FB) 2, Dup 2, MW13, MW80R, MW105, MW33, MW2-90, MW3-90, and MW104.

I. RECEIPT

- All samples were received at the laboratory on 13 Oct 2016 at 1430.
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 6.3°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

- With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.



CASE NARRATIVE – AMENDED 13 DECEMBER 16 (SELENIUM QUALIFIERS)

MVTL Lab Reference No/SDG: 201682-3373
Client: Montana Dakota Utilities
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Project Identification: CCR October 2016
MVTL Laboratory Identifications: 16-W4715 through 16-W4730
Page 2 of 2

III. METHODS

- Approved methodology was followed for all sample analyses.
 - Methods 6010D and Method 6020B were used to analyze the metals.

IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
 - For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
 - For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
 - The recoveries for one selenium dissolved matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. High recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
 - One selenium total matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike duplicate was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.
 - Recovery for one mercury matrix spike was outside of the acceptable limits. Recovery of the matrix spike duplicate was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 13 Dec 16
Claudette Carroll - MVTL Bismarck Laboratory Manager



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Quality Control Report

Lab IDs: 16-W4715 to 16-W4730

Project: MDU Heskett CCR

Work Order: 201682-3373

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	0.1000	111	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.001 < 0.001	0.1056 0.1056	106 106	75-125 75-125	0.1056 0.1056	0.1054 0.0976	105 98	0.2 7.9	20 20	- -	- -	< 0.001
Antimony - Total mg/l	0.1000 0.1000	108 102	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.001 < 0.001 < 0.001	0.1071 0.4464 0.4302	107 112 108	75-125 75-125 75-125	0.1071 0.4464 0.4302	0.1036 0.4524 0.4436	104 113 111	3.3 1.3 3.1	20 20 20	- - -	- - -	< 0.001 < 0.001 < 0.001
Arsenic - Dissolved mg/l	0.1000	115	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.002 < 0.002	0.1127 0.1126	113 113	75-125 75-125	0.1127 0.1126	0.1124 0.1060	112 106	0.3 6.0	20 20	- -	- -	< 0.002
Arsenic - Total mg/l	0.1000 0.1000	109 107	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 < 0.002 < 0.002	0.1066 0.4672 0.4536	107 117 113	75-125 75-125 75-125	0.1066 0.4672 0.4536	0.1102 0.4512 0.4682	110 113 117	3.3 3.5 3.2	20 20 20	- - -	- - -	< 0.002 < 0.002 < 0.002
Barium - Dissolved mg/l	0.1000	106	80-120	0.100 0.100	16W4560Q 16W4730q	0.0623 0.0080	0.1642 0.1066	102 99	75-125 75-125	0.1642 0.1066	0.1626 0.0987	100 91	1.0 7.7	20 20	- -	- -	< 0.002
Barium - Total mg/l	0.1000 0.1000	105 99	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 0.0178 0.0121	0.1015 0.4374 0.4190	102 105 102	75-125 75-125 75-125	0.1015 0.4374 0.4190	0.1002 0.4256 0.4334	100 102 105	1.3 2.7 3.4	20 20 20	- - -	- - -	< 0.002 < 0.002 < 0.002
Beryllium - Dissolved mg/l	0.1000 0.1000	91 99	80-120 80-120	0.100 0.100	16W4563Q 16-W4730	< 0.0005 < 0.0005	0.0881 0.0902	88 90	75-125 75-125	0.0881 0.0902	0.0872 0.0941	87 94	1.0 4.2	20 20	- -	- -	< 0.0005 < 0.0005
Beryllium - Total mg/l	0.1000 0.1000	100 94	80-120 80-120	0.100 0.400 0.400	16-W4715 16-W4717 16-W4725	< 0.0005 < 0.0005 < 0.0005	0.0954 0.4006 0.3918	95 100 98	75-125 75-125 75-125	0.0954 0.4006 0.3918	0.0895 0.4078 0.3932	89 102 98	6.4 1.8 0.4	20 20 20	- - -	- - -	< 0.0005 < 0.0005 < 0.0005
Boron - Dissolved mg/l	0.40	115	80-120	0.600 1.50	16-W4720 16-W4730	0.46 1.04	1.00 2.36	90 88	75-125 75-125	1.00 2.36	0.98 2.40	87 91	2.0 1.7	20 20	- -	- -	< 0.1 < 0.1 < 0.1



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Quality Control Report

Lab IDs: 16-W4715 to 16-W4730

Project: MDU Heskett CCR

Work Order: 201682-3373

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
Boron - Total mg/l	0.40	112	80-120	0.400	16-W4717	1.03	1.38	88	75-125	1.38	1.35	80	2.2	20	-	-	< 0.1
	0.40	100	80-120	0.400	16-W4725	0.39	0.80	102	75-125	0.80	0.76	92	5.1	20	-	-	< 0.1
	0.40	110	80-120												-	-	< 0.1
	0.40	115	80-120												-	-	< 0.1
															-	-	< 0.1
Cadmium - Dissolved mg/l	0.1000	111	80-120	0.100	16W4560Q	< 0.0005	0.1050	105	75-125	0.1050	0.1052	105	0.2	20	-	-	< 0.0005
				0.100	16W4730q	< 0.0005	0.0950	95	75-125	0.0950	0.0900	90	5.4	20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000	108	80-120	0.100	16W4715Q	< 0.0005	0.1068	107	75-125	0.1068	0.1057	106	1.0	20	-	-	< 0.0005
	0.1000	103	80-120	0.400	16W4717q	< 0.0005	0.4308	108	75-125	0.4308	0.4382	110	1.7	20	-	-	< 0.0005
				0.400	16W4725q	< 0.0005	0.4290	107	75-125	0.4290	0.4352	109	1.4	20	-	-	< 0.0005
Calcium - Dissolved mg/l	20.0	108	80-120	100	16W4680q	91.2	181	90	75-125	181	183	92	1.1	20	-	-	< 1
				500	16W4729q	600	1100	100	75-125	1100	1160	112	5.3	20	-	-	< 1
Calcium - Total mg/l	20.0	102	80-120	500	16W4681q	149	610	92	75-125	610	610	92	0.0	20	-	-	< 1
	20.0	106	80-120	500	16W4717q	346	845	100	75-125	845	845	100	0.0	20	-	-	< 1
	20.0	110	80-120	500	16W4725q	274	760	97	75-125	760	755	96	0.7	20	-	-	< 1
				500	16W4753q	108	580	94	75-125	580	585	95	0.9	20	-	-	< 1
Chloride mg/l	30.0	96	80-120	30.0	16-W4677	30.5	59.5	97	80-120	59.5	60.9	101	2.3	20	-	-	< 1
	30.0	96	80-120	30.0	16-W4729	34.8	66.2	105	80-120	66.2	66.4	105	0.3	20	-	-	< 1
															-	-	< 1
Chromium - Dissolved mg/l	0.1000	109	80-120	0.100	16W4560Q	< 0.002	0.1037	104	75-125	0.1037	0.1046	105	0.9	20	-	-	< 0.002
				0.100	16W4730q	< 0.002	0.1081	108	75-125	0.1081	0.1022	102	5.6	20	-	-	< 0.002



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Quality Control Report

Lab IDs: 16-W4715 to 16-W4730

Project: MDU Heskett CCR

Work Order: 201682-3373

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
Chromium - Total mg/l	0.1000	107	80-120	0.100	16W4715Q	< 0.002	0.1034	103	75-125	0.1034	0.1030	103	0.4	20	-	-	< 0.002
	0.1000	98	80-120	0.400	16W4717q	< 0.002	0.4194	105	75-125	0.4194	0.4108	103	2.1	20	-	-	< 0.002
				0.400	16W4725q	< 0.002	0.4080	102	75-125	0.4080	0.4244	106	3.9	20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.1000	110	80-120	0.100	16W4560Q	< 0.002	0.1028	103	75-125	0.1028	0.1030	103	0.2	20	-	-	< 0.002
				0.100	16W4730q	0.0023	0.1074	105	75-125	0.1074	0.1014	99	5.7	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	107	80-120	0.100	16W4715Q	< 0.002	0.1038	104	75-125	0.1038	0.1030	103	0.8	20	-	-	< 0.002
	0.1000	99	80-120	0.400	16W4717q	< 0.002	0.4310	108	75-125	0.4310	0.4144	104	3.9	20	-	-	< 0.002
				0.400	16W4725q	< 0.002	0.4172	104	75-125	0.4172	0.4226	106	1.3	20	-	-	< 0.002
Fluoride mg/l	0.50	104	90-110	0.500	16-W4719	0.19	0.65	92	80-120	0.65	0.66	94	1.5	20	-	-	< 0.1
				0.500	16-W4724	0.74	1.20	92	80-120	1.20	1.21	94	0.8	20	-	-	< 0.1
Lead - Dissolved mg/l	0.1000	106	80-120	0.100	16W4560Q	0.0022	0.1022	100	75-125	0.1022	0.1013	99	0.9	20	-	-	< 0.0005
				0.100	16W4730q	< 0.0005	0.0917	92	75-125	0.0917	0.0835	84	9.4	20	-	-	< 0.0005
Lead - Total mg/l	0.1000	107	80-120	0.100	16W4715Q	< 0.0005	0.1037	104	75-125	0.1037	0.1034	103	0.3	20	-	-	< 0.0005
	0.1000	101	80-120	0.400	16W4717q	< 0.0005	0.4152	104	75-125	0.4152	0.4008	100	3.5	20	-	-	< 0.0005
				0.400	16W4725q	< 0.0005	0.3976	99	75-125	0.3976	0.4108	103	3.3	20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.40	95	80-120	0.200	16-W4680	0.06	0.29	115	75-125	0.29	0.30	120	3.4	20	-	-	< 0.1
				0.200	16-W4722	< 0.1	0.23	115	75-125	0.23	0.23	115	0.0	20	-	-	< 0.1
				1.00	16-W4730	1.87	2.99	112	75-125	2.99	2.96	109	1.0	20	-	-	< 0.1
Lithium - Total mg/l	0.40	95	80-120	0.400	16-W4681	0.15	0.56	102	75-125	0.56	0.57	105	1.8	20	-	-	< 0.1
	0.40	100	80-120	0.400	16-W4717	0.54	1.00	115	75-125	1.00	0.98	110	2.0	20	-	-	< 0.1
	0.40	88	80-120	0.400	16-W4725	0.67	1.14	118	75-125	1.14	1.03	90	10.1	20	-	-	< 0.1
Magnesium - Dissolved mg/l	20.0	106	80-120	100	16W4680q	137	225	88	75-125	225	228	91	1.3	20	-	-	< 1
				500	16W4729q	279	805	105	75-125	805	845	113	4.8	20	-	-	< 1



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MEMBER
ACIL

Quality Control Report

Lab IDs: 16-W4715 to 16-W4730

Project: MDU Heskett CCR

Work Order: 201682-3373

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
Selenium - Dissolved mg/l	0.1000	114	80-120	0.100 0.100	16-W4563 16-W4730	< 0.002 0.1792	0.1046 0.3058	105 127	75-125 75-125	0.1046 0.3058	0.1012 0.3324	101 153	3.3 8.3	20 20	- -	- -	< 0.002
Selenium - Total mg/l	0.1000 0.1000	108 110	80-120 80-120	0.100 0.400 0.400	16-W4715 16W4717q 16W4725q	< 0.002 < 0.002 0.0576	0.0977 0.4756 0.5540	98 119 124	75-125 75-125 75-125	0.0977 0.4756 0.5540	0.0943 0.4586 0.5684	94 115 128	3.5 3.6 2.6	20 20 20	- - -	- - -	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	102	80-120	100 500	16W4680q 16W4729q	79.4 635	173 1120	94 97	75-125 75-125	173 1120	174 1170	95 107	0.6 4.4	20 20	- -	- -	< 1 < 1
Sodium - Total mg/l	20.0 20.0 20.0	100 107 110	80-120 80-120 80-120	500 500 500 500	16W4681q 16W4717q 16W4725q 16W4753q	122 575 585 510	600 1100 1090 995	96 105 101 97	75-125 75-125 75-125 75-125	600 1100 1090 995	600 1110 1060 995	96 107 95 97	0.0 0.9 2.8 0.0	20 20 20 20	- - - -	- - - -	< 1 < 1 < 1 < 1 < 1 < 1
Sulfate mg/l	100 100 100	93 95 94	90-110 90-110 90-110	100 100 500 4000	16-W4682 16-W4722 16-W4663 16-W4729	< 5 < 5 357 2730	92.2 92.6 801 6350	92 93 89 90	80-120 80-120 80-120 80-120	92.2 92.6 6350 801	92.2 91.6 6350 800	92 92 89 90	0.0 1.1 0.0 0.1	20 20 20 20	- - - -	- - - -	< 5 < 5 < 5
Thallium - Dissolved mg/l	0.1000	106	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.0005 < 0.0005	0.0998 0.0930	100 93	75-125 75-125	0.0998 0.0930	0.0994 0.0875	99 88	0.4 6.1	20 20	- -	- -	< 0.0005
Thallium - Total mg/l	0.1000 0.1000	105 100	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.0005 < 0.0005 < 0.0005	0.1032 0.4102 0.3956	103 103 99	75-125 75-125 75-125	0.1032 0.4102 0.3956	0.1029 0.3946 0.4106	103 99 103	0.3 3.9 3.7	20 20 20	- - -	- - -	< 0.0005 < 0.0005
Total Alkalinity mg/l CaCO3	410	98	90-110	410 410	16-W4717 16-W4727	462 488	853 876	95 95	80-120 80-120	853 876	850 878	95 95	0.4 0.2	20 20	94	80-120	< 20 < 20
Total Dissolved Solids mg/l	- -	- -	- -	- -	- -	- -	- -	- -	- -	9640 23200	9670 23400	- -	0.3 0.9	20 20	- -	- -	< 5

Quality Control Report

Lab IDs: 16-W4715 to 16-W4730

Project: MDU Heskett CCR

Work Order: 201682-3373

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	-	-	-	-	-	-	-	-	-	154	149	-	3.3	20	-	-	< 1
	-	-	-	-	-	-	-	-	-	3	3	-	0.0	*	-	-	< 1
	-	-	-	-	-	-	-	-	-	297	316	-	6.2	20	-	-	
	-	-	-	-	-	-	-	-	-	174	188	-	7.7	20	-	-	

* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: _____

C. Cantel
 Z JW16



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4715
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTl Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.3C ROI

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	24 Oct 16 12:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 13:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	21 Oct 16 16:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4715
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.3C ROI

Event and Year: Oct 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll ^{CC} *29 NOV 16*

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 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4716
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Dup 1

Temp at Receipt: 6.3C ROI

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	13	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	533	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	0.20	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4350	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	7.8	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	24 Oct 16 12:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	7470	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	426	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	360	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	1360	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	18.0	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.71	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	1.16	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	441	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	378	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	1460	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	18.7	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.70	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.28	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	0.0029	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0217	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0033	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0023	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	0.0028	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4716
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Dup 1

Temp at Receipt: 6.3C ROI

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0210 mg/l		0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l		0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/l		0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/l		0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0038 mg/l		0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/l		0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^ mg/l		0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll

*CC
29 NOV 16*

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 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4717
 Work Order #:82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 15:55
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW101

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.7	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.76	units	NA	SM 4500 H+ B	12 Oct 16 15:55	JSM
Temperature - Field	9.12	Degrees C	NA	SM 2550B	12 Oct 16 15:55	JSM
Total Alkalinity	462	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	4690	umhos/cm	1	EPA 120.1	12 Oct 16 15:55	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2600	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	18.1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	4170	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	346	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	276	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	575	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	19.3	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.54	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	1.03	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	358	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	286	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	595	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	19.6	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.50	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.05	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0178	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4717
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 15:55
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW101

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0166	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll ^{CC} 29 NOV 16

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4718
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 11:41
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW102

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result	Method	Method Reference	Date Analyzed	Analyst
Metal Digestion			EPA 200.2	13 Oct 16	ML
pH	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00 ML
Total Suspended Solids	13	mg/l	1	I3765-85	14 Oct 16 13:24 ML
pH - Field	6.86	units	NA	SM 4500 H+ B	12 Oct 16 11:41 JSM
Temperature - Field	8.82	Degrees C	NA	SM 2550B	12 Oct 16 11:41 JSM
Total Alkalinity	533	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00 ML
Conductivity - Field	7677	umhos/cm	1	EPA 120.1	12 Oct 16 11:41 JSM
Fluoride	0.21	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00 ML
Sulfate	4810	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30 EMS
Chloride	7.7	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22 EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00 EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41 EV
Total Dissolved Solids	7430	mg/l	5	I1750-85	17 Oct 16 14:45 ML
Calcium - Total	456	mg/l	1.0	6010	17 Oct 16 12:57 SZ
Magnesium - Total	379	mg/l	1.0	6010	17 Oct 16 12:57 SZ
Sodium - Total	1440	mg/l	1.0	6010	17 Oct 16 12:57 SZ
Potassium - Total	19.0	mg/l	1.0	6010	17 Oct 16 12:57 SZ
Lithium - Total	0.74	mg/l	0.10	6010	19 Oct 16 10:59 KMD
Boron - Total	1.18	mg/l	0.10	6010	18 Oct 16 13:20 KMD
Calcium - Dissolved	436	mg/l	1.0	6010	21 Oct 16 10:19 SZ
Magnesium - Dissolved	385	mg/l	1.0	6010	21 Oct 16 10:19 SZ
Sodium - Dissolved	1540	mg/l	1.0	6010	21 Oct 16 10:19 SZ
Potassium - Dissolved	19.6	mg/l	1.0	6010	21 Oct 16 10:19 SZ
Lithium - Dissolved	0.76	mg/l	0.10	6010	19 Oct 16 12:59 KMD
Boron - Dissolved	1.31	mg/l	0.10	6010	18 Oct 16 15:20 KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25 KMD
Arsenic - Total	0.0028	mg/l	0.0020	6020	22 Oct 16 11:25 KMD
Barium - Total	0.0216	mg/l	0.0020	6020	22 Oct 16 11:25 KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14 CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25 KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25 KMD
Cobalt - Total	0.0033	mg/l	0.0020	6020	22 Oct 16 11:25 KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25 KMD
Molybdenum - Total	0.0027	mg/l	0.0020	6020	22 Oct 16 11:25 KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25 KMD

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
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CERTIFICATION: ND # ND-00016



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4718
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 11:41
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW102

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	0.0033 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0208 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0039 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 mg/l ^	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll *CC* *29 Nov 16*

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4719
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 9:42
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW103

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.8	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	3	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.74	units	NA	SM 4500 H+ B	12 Oct 16 9:42	JSM
Temperature - Field	7.83	Degrees C	NA	SM 2550B	12 Oct 16 9:42	JSM
Total Alkalinity	444	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	4871	umhos/cm	1	EPA 120.1	12 Oct 16 9:42	JSM
Fluoride	0.19	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2660	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	136	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	4460	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	525	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	456	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	246	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	18.8	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.56	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.15	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	530	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	464	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	242	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	19.0	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.56	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.14	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0076	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1468	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4719
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 9:42
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW103

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0068	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.1121	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll ^{cc} *29 NOV 16*

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 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4720
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 8:07
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW44R

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.7	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.58	units	NA	SM 4500 H+ B	12 Oct 16 8:07	JSM
Temperature - Field	7.52	Degrees C	NA	SM 2550B	12 Oct 16 8:07	JSM
Total Alkalinity	453	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	8838	umhos/cm	1	EPA 120.1	12 Oct 16 8:07	JSM
Fluoride	0.65	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	5490	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	240	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	8980	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	413	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	975	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	1020	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	33.2	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	1.22	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.47	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	419	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	985	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	1020	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	32.2	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	1.21	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.46	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0072	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0889	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4720
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 8:07
Date Received: 13 Oct 16 14:30
Sampled By: MVT L Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW44R

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0066	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0926	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll ^E 29 NOV 16

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4721
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 13:47
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW70

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.0	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	7.01	units	NA	SM 4500 H+ B	12 Oct 16 13:47	JSM
Temperature - Field	8.32	Degrees C	NA	SM 2550B	12 Oct 16 13:47	JSM
Total Alkalinity	426	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	3932	umhos/cm	1	EPA 120.1	12 Oct 16 13:47	JSM
Fluoride	0.33	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	1830	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	34.1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	3320	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	353	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	144	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	488	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	12.2	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.29	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.41	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	366	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	147	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	486	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	12.2	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.28	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.40	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0099	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0045	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0132	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4721
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 13:47
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW70

Temp at Receipt: 6.3C

Event and Year: Oct 2016

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, and Analyst. Rows include various elements like Thallium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, and Selenium.

* Holding time exceeded

Approved by:

Claudette K. Carroll (handwritten signature) CC 29 Nov 16

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4722
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Field Blank 2

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.0	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	< 1	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	< 1	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	< 1	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4722
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: Field Blank 2

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll

*CC
29 Nov 16*

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4723
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Dup 2

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.2	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	540	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	0.32	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2940	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	166	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5080	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	274	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	540	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	585	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.67	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.40	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	291	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	575	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	610	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.64	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.43	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0114	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0033	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0566	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

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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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4723
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: Dup 2

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

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

* Holding time exceeded

Approved by: Claudette K. Carroll (handwritten signature) CC 29 Nov 16

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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 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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Page: 1 of 2

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4724
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16 8:13
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW13

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.1	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.86	units	NA	SM 4500 H+ B	13 Oct 16 8:13	JSM
Temperature - Field	7.39	Degrees C	NA	SM 2550B	13 Oct 16 8:13	JSM
Total Alkalinity	503	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	10508	umhos/cm	1	EPA 120.1	13 Oct 16 8:13	JSM
Fluoride	0.74	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	6220	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	90.3	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	9640	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	392	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	605	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	1880	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	24.8	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.65	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.69	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	404	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	625	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	1880	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	25.0	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.60	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.68	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0084	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0503	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4724
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 8:13
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW13

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0062	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0495	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll ^{CC} 29 Nov 16

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4725
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16 9:52
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW80R

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	5	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	7.12	units	NA	SM 4500 H+ B	13 Oct 16 9:52	JSM
Temperature - Field	9.38	Degrees C	NA	SM 2550B	13 Oct 16 9:52	JSM
Total Alkalinity	542	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5683	umhos/cm	1	EPA 120.1	13 Oct 16 9:52	JSM
Fluoride	0.32	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2810	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	168	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5050	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	274	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	545	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	585	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.67	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.39	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	291	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	575	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	610	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.66	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0121	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0034	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0576	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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CERTIFICATION: ND # ND-00016



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4725
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 9:52
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW80R

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0103	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	0.0033	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0596	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll

*CC
29 NOV 16*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4726
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16 11:57
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW105

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	7	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.77	units	NA	SM 4500 H+ B	13 Oct 16 11:57	JSM
Temperature - Field	8.85	Degrees C	NA	SM 2550B	13 Oct 16 11:57	JSM
Total Alkalinity	449	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	7202	umhos/cm	1	EPA 120.1	13 Oct 16 11:57	JSM
Fluoride	0.26	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4140	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	378	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	6700	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	383	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	765	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	785	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	20.0	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	1.01	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.41	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	401	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	795	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	795	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	20.0	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.95	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.39	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0212	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

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

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CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4726
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 11:57
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW105

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	0.0006	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0183	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll

*CC
29 NOV 16*

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:

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

CERTIFICATION: ND # ND-00016



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4727
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 8:45
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW33

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 6.8	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	5	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.50	units	NA	SM 4500 H+ B	13 Oct 16 8:45	DJN
Temperature - Field	7.32	Degrees C	NA	SM 2550B	13 Oct 16 8:45	DJN
Total Alkalinity	488	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5399	umhos/cm	1	EPA 120.1	13 Oct 16 8:45	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	3010	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	12.2	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5030	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	481	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	484	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	479	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	22.3	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.65	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.40	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	474	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	474	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	467	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	21.2	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.65	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0168	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0027	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4727
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16 8:45
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW33

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0162	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0024	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by: Claudette K. Carroll 29/11/16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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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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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4728
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 11:49
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW2-90

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.2	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.87	units	NA	SM 4500 H+ B	13 Oct 16 11:49	DJN
Temperature - Field	8.29	Degrees C	NA	SM 2550B	13 Oct 16 11:49	DJN
Total Alkalinity	503	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	7601	umhos/cm	1	EPA 120.1	13 Oct 16 11:49	DJN
Fluoride	0.99	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4390	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	86.3	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	6960	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	480	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	730	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	805	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	25.4	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.87	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.38	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	496	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	730	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	790	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	24.6	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.86	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0104	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1396	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4728
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 11:49
Date Received: 13 Oct 16 14:30
Sampled By: MVTl Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW2-90

Temp at Receipt: 6.3C

Event and Year: Oct 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0101	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.1558	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll

*CA
29 NOV 16*

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

Amended 18 Nov 16 (Sample date)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4729
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 12 Oct 16 10:12
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW3-90

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.1	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	3	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.79	units	NA	SM 4500 H+ B	13 Oct 16 10:12	DJN
Temperature - Field	7.60	Degrees C	NA	SM 2550B	13 Oct 16 10:12	DJN
Total Alkalinity	541	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5289	umhos/cm	1	EPA 120.1	13 Oct 16 10:12	DJN
Fluoride	0.13	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2730	mg/l	5.00	ASTM D516-07	14 Oct 16 15:28	EMS
Chloride	34.8	mg/l	1.0	SM4500-CL-E	20 Oct 16 14:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	4940	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	570	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	266	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	615	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	13.8	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	< 0.2 @	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	600	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	279	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	635	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	13.8	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	< 0.2 @	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	< 0.2 @	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0131	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0445	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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 18 Nov 16 (Sample date)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4729
Work Order #: 82-3373
Account #: 002800
Date Sampled: 12 Oct 16 10:12
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW3-90

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

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

* Holding time exceeded

Approved by:

Claudette K. Carroll (handwritten signature) 29 NOV 16

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

Amended 18 Nov 16 (Sampled By)

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 27 Oct 16
 Lab Number: 16-W4730
 Work Order #: 82-3373
 Account #: 002800
 Date Sampled: 13 Oct 16 13:15
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW104

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
pH	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	4	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.89	units	NA	SM 4500 H+ B	13 Oct 16 13:15	DJN
Temperature - Field	10.6	Degrees C	NA	SM 2550B	13 Oct 16 13:15	DJN
Total Alkalinity	575	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	14302	umhos/cm	1	EPA 120.1	13 Oct 16 13:15	DJN
Fluoride	0.53	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	10100	mg/l	5.00	ASTM D516-07	14 Oct 16 15:28	EMS
Chloride	102	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	14300	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	422	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Magnesium - Total	1540	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Sodium - Total	1990	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Potassium - Total	36.2	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Lithium - Total	1.78	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.99	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	448	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	1620	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	2040	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	38.2	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	1.87	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.04	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0082	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0023	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1441	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Oct 16
Lab Number: 16-W4730
Work Order #: 82-3373
Account #: 002800
Date Sampled: 13 Oct 16 13:15
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: MW104

PO #: 160249

Event and Year: Oct 2016

Temp at Receipt: 6.3C

Table with 7 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include various elements like Thallium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium (Dissolved).

* Holding time exceeded

Approved by:

Claudette K. Carroll

Handwritten initials and date: CC 29/11/16

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:

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

CERTIFICATION: ND # ND-00016



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CASE NARRATIVE

MVTl Lab Reference No/SDG: 201682-3374
IML Lab Reference No/SDG: S1610252
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR October 2016
MVTl Laboratory Identifications: 16-W4731 through 16-W4746
IML Laboratory Identifications: S1610252-001 through S1610252-016
Page 1 of 2

MDU Sample Identification	IML Laboratory #	MVTl Laboratory #
Field Blank (FB) 1	S1610252-001	16-W4731
Dup 1	S1610252-002	16-W4732
MW101	S1610252-003	16-W4733
MW102	S1610252-004	16-W4734
MW103	S1610252-005	16-W4735
MW44R	S1610252-006	16-W4736
MW70	S1610252-007	16-W4737
Field Blank (FB) 2	S1610252-008	16-W4738
Dup 2	S1610252-009	16-W4739
MW13	S1610252-010	16-W4740
MW80R	S1610252-011	16-W4741
MW105	S1610252-012	16-W4742
MW33	S1610252-013	16-W4743
MW2-90	S1610252-014	16-W4744
MW3-90	S1610252-015	16-W4745
MW104	S1610252-016	16-W4746

I. RECEIPT

- All samples were received at the laboratory on 13 October 2016 at 1430.
- 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 6.3°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 18 October 2016.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-3374
IML Lab Reference No/SDG: S1610252
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR October 2016
MVTL Laboratory Identifications: 16-W4731 through 16-W4746
IML Laboratory Identifications: S1610252-001 through S1610252-016
Page 2 of 2

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.

V. REPORTING

- Per email from Barr Engineering dated 10 March 2016, IML was directed to report numerical values, including negative results for both the sample results and the method analyte precision.
- Per email from Samantha Marshall with MDU, MVTL was directed to report the radium 226 and radium 228 values individually and then MDU would calculate the summation result using their database tabulations.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 30 NOV 16
Claudette Carroll - MVTL Bismarck Laboratory Manager



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Page: 1 of 1

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4731
Work Order #: 82-3374
Account #: 002800
Date Sampled: 12 Oct 16
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			28 Oct 16	OL
Radium 228	See Attached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 NOV 16

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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www.mvttl.com



Page: 1 of 1

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4732
Work Order #: 82-3374
Account #: 002800
Date Sampled: 12 Oct 16
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: Dup 1

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			28 Oct 16	OL
Radium 228	See Attached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{LC} 30/NOV/16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4733
Work Order #: 82-3374
Account #: 002800
Date Sampled: 12 Oct 16 15:55
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW101

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.76 units	NA	SM 4500 H+ B	12 Oct 16 15:55	JSM
Temperature - Field	9.12 Degrees C	NA	SM 2550B	12 Oct 16 15:55	JSM
Conductivity - Field	4690 umhos/cm	1	EPA 120.1	12 Oct 16 15:55	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll

cc
30 NOV 16

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:

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

Samantha Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 30 Nov 16
 Lab Number: 16-W4734
 Work Order #: 82-3374
 Account #: 002800
 Date Sampled: 12 Oct 16 11:41
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW102

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	units	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	12 Oct 16 11:41	JSM
Temperature - Field	8.82	Degrees C	NA	SM 2550B	12 Oct 16 11:41	JSM
Conductivity - Field	7677	umhos/cm	1	EPA 120.1	12 Oct 16 11:41	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228	See Attached Report				12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll ^{CC} 30 Nov 16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4735
Work Order #: 82-3374
Account #: 002800
Date Sampled: 12 Oct 16 9:42
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW103

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.74	units	NA	SM 4500 H+ B	12 Oct 16	9:42	JSM
Temperature - Field	7.83	Degrees C	NA	SM 2550B	12 Oct 16	9:42	JSM
Conductivity - Field	4871	umhos/cm	1	EPA 120.1	12 Oct 16	9:42	JSM
Radium 226	See Attached Report				31 Oct 16		OL
Radium 228	See Attached Report				12 Nov 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll ^{CC} 30 NOV 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4736
Work Order #: 82-3374
Account #: 002800
Date Sampled: 12 Oct 16 8:07
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW44R

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.58 units	NA	SM 4500 H+ B	12 Oct 16 8:07	JSM
Temperature - Field	7.52 Degrees C	NA	SM 2550B	12 Oct 16 8:07	JSM
Conductivity - Field	8838 umhos/cm	1	EPA 120.1	12 Oct 16 8:07	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 Nov 16

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 Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 30 Nov 16
 Lab Number: 16-W4737
 Work Order #: 82-3374
 Account #: 002800
 Date Sampled: 12 Oct 16 13:42
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW70

Temp at Receipt: 6.3C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.01	units	NA	SM 4500 H+ B	12 Oct 16 13:42	JSM
Temperature - Field	8.32	Degrees C	NA	SM 2550B	12 Oct 16 13:42	JSM
Conductivity - Field	3932	umhos/cm	1	EPA 120.1	12 Oct 16 13:42	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228	See Attached Report				12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 NOV 16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4738
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: Field Blank 2

PO #: 160249

Temp at Receipt: 6.3C ROI

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Radium 226 and Radium 228, both with 'See Attached Report' and 'OL' analyst.

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 30 NOV 16

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 Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 30 Nov 16
 Lab Number: 16-W4739
 Work Order #: 82-3374
 Account #: 002800
 Date Sampled: 13 Oct 16
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: Dup 2

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll ^{CC} 30 NOV 16

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 Marshall
 Montana Dakota Utilities
 400 N. 4th
 Bismarck ND 58501

Report Date: 30 Nov 16
 Lab Number: 16-W4740
 Work Order #: 82-3374
 Account #: 002800
 Date Sampled: 13 Oct 16 8:13
 Date Received: 13 Oct 16 14:30
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW13

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.86 units	NA	SM 4500 H+ B	13 Oct 16 8:13	JSM
Temperature - Field	7.39 Degrees C	NA	SM 2550B	13 Oct 16 8:13	JSM
Conductivity - Field	10508 umhos/cm	1	EPA 120.1	13 Oct 16 8:13	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll ^{EC} 30 NOV 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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CERTIFICATION: ND # ND-00016



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Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4741
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 9:52
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW80R

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.12 units	NA	SM 4500 H+ B	13 Oct 16 9:52	JSM
Temperature - Field	9.38 Degrees C	NA	SM 2550B	13 Oct 16 9:52	JSM
Conductivity - Field	5683 umhos/cm	1	EPA 120.1	13 Oct 16 9:52	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 Nov 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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CERTIFICATION: ND # ND-00016



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Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4742
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 11:57
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW105

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.77 units	NA	SM 4500 H+ B	13 Oct 16 11:57	JSM
Temperature - Field	8.85 Degrees C	NA	SM 2550B	13 Oct 16 11:57	JSM
Conductivity - Field	7202 umhos/cm	1	EPA 120.1	13 Oct 16 11:57	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll

CC
30 Nov 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4743
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 8:45
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW33

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.50 units	NA	SM 4500 H+ B	13 Oct 16 8:45	JSM
Temperature - Field	7.32 Degrees C	NA	SM 2550B	13 Oct 16 8:45	JSM
Conductivity - Field	5399 umhos/cm	1	EPA 120.1	13 Oct 16 8:45	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 NOV 16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4744
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 11:49
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW2-90

PO #: 160249

Temp at Receipt: 6.3C ROI

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include pH - Field, Temperature - Field, Conductivity - Field, Radium 226, and Radium 228.

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 30 Nov 16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4745
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 10:12
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW3-90

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.79 units	NA	SM 4500 H+ B	13 Oct 16 10:12	JSM
Temperature - Field	7.60 Degrees C	NA	SM 2550B	13 Oct 16 10:12	JSM
Conductivity - Field	5289 umhos/cm	1	EPA 120.1	13 Oct 16 10:12	JSM
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll ^{CC} 30 Nov 16

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 30 Nov 16
Lab Number: 16-W4746
Work Order #: 82-3374
Account #: 002800
Date Sampled: 13 Oct 16 13:15
Date Received: 13 Oct 16 14:30
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem Oct 2016

PO #: 160249

Sample Description: MW104

Temp at Receipt: 6.3C ROI

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, and Analyst. Rows include pH - Field, Temperature - Field, Conductivity - Field, Radium 226, and Radium 228.

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll 30 Nov 16

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: 11/16/2016

CLIENT: MVTL Laboratories, Inc.
Project: 201682-3374
Lab Order: S1610252

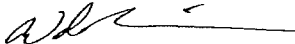
CASE NARRATIVE
Report ID: S1610252001

Samples 16-W4731 Field Blank 1, 16-W4732 Dup 1, 16-W4733 MW101, 16-W4734 MW102, 16-W4735 MW103, 16-W4736 MW44R, 16-W4737 MW70, 16-W4738 Field Blank 2, 16-W4739 Dup 2, 16-W4740 MW13, 16-W4741 MW80R, 16-W4742 MW105, 16-W4743 MW33, 16-W4744 MW2-90, 16-W4745 MW3-90, and 16-W4746 MW104 were received on October 18, 2016.

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-001
ClientSample ID: 16-W4731 Field Blank 1
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/28/2016 1713	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/28/2016 1713	MB
Radium 228	-2.7	pCi/L		1	Ga-Tech	11/12/2016 444	MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/12/2016 444	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-002
ClientSample ID: 16-W4732 Dup 1
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.6	pCi/L		0.2	SM 7500 Ra-B	10/28/2016 1713	MB
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	10/28/2016 1713	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	11/12/2016 748	MB
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	11/12/2016 748	MB

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
 - J Analyte detected below quantitation limits
 - M Value exceeds Monthly Ave or MCL or is less than LCL
 - O Outside the Range of Dilutions
 - X Matrix Effect

- C Calculated Value
- 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

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-003
ClientSample ID: 16-W4733 MW101
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 3:55:00 PM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.9	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551 MB
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	10/31/2016 1551 MB
Radium 228	0.8	pCi/L		1	Ga-Tech	11/12/2016 1053 MB
Radium 228 Precision (±)	3.1	pCi/L			Ga-Tech	11/12/2016 1053 MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:	B	Analyte detected in the associated Method Blank	C	Calculated Value
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
	O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
	X	Matrix Effect		

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-004
ClientSample ID: 16-W4734 MW102
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 11:41:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	11/12/2016 1357	MB
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	11/12/2016 1357	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-005
ClientSample ID: 16-W4735 MW103
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 9:42:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551 MB
Radium 228	-5.1	pCi/L		1	Ga-Tech	11/12/2016 1701 MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/12/2016 1701 MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:	B	Analyte detected in the associated Method Blank	C	Calculated Value
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
	O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
	X	Matrix Effect		

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-006
ClientSample ID: 16-W4736 MW44R
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 8:07:00 AM
DateReceived: 10/18/2016 11:43:00 AM
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	10/31/2016 1551 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551 MB
Radium 228	-6.4	pCi/L		1	Ga-Tech	11/12/2016 2005 MB
Radium 228 Precision (±)	3.6	pCi/L			Ga-Tech	11/12/2016 2005 MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:	B	Analyte detected in the associated Method Blank	C	Calculated Value
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
	O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
	X	Matrix Effect		

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-007
ClientSample ID: 16-W4737 MW70
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 1:42:00 PM
DateReceived: 10/18/2016 11:43:00 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
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
X Matrix Effect

- C Calculated Value
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

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



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-008
ClientSample ID: 16-W4738 Field Blank 2
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.15	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552 MB
Radium 228	0.2	pCi/L		1	Ga-Tech	11/13/2016 214 MB
Radium 228 Precision (±)	2.3	pCi/L			Ga-Tech	11/13/2016 214 MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-009
ClientSample ID: 16-W4739 Dup 2
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552 MB
Radium 228	-3.0	pCi/L		1	Ga-Tech	11/13/2016 519 MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	11/13/2016 519 MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:	B Analyte detected in the associated Method Blank	C Calculated Value
	E Value above quantitation range	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	L Analyzed by another laboratory
	M Value exceeds Monthly Ave or MCL or is less than LCL	ND Not Detected at the Reporting Limit
	O Outside the Range of Dilutions	S Spike Recovery outside accepted recovery limits
	X Matrix Effect	

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-010
ClientSample ID: 16-W4740 MW13
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 8:13:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-1.8	pCi/L		1	Ga-Tech	11/13/2016 823	MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	11/13/2016 823	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-011
ClientSample ID: 16-W4741 MW80R
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 9:52:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.16	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-2.8	pCi/L		1	Ga-Tech	11/13/2016 1127	MB
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	11/13/2016 1127	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-012
ClientSample ID: 16-W4742 MW105
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 11:57:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	0.2	pCi/L		1	Ga-Tech	11/13/2016 1432	MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	11/13/2016 1432	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | | | |
|--------------------|---|--|----|--|
| Qualifiers: | B | Analyte detected in the associated Method Blank | C | Calculated Value |
| | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| | J | Analyte detected below quantitation limits | L | Analyzed by another laboratory |
| | M | Value exceeds Monthly Ave or MCL or is less than LCL | ND | Not Detected at the Reporting Limit |
| | O | Outside the Range of Dilutions | S | Spike Recovery outside accepted recovery limits |
| | X | Matrix Effect | | |

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-013
ClientSample ID: 16-W4743 MW33
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 8:45:00 AM
DateReceived: 10/18/2016 11:43:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.5	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	11/13/2016 1736	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	11/13/2016 1736	MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | | | |
|--------------------|---|--|----|--|
| Qualifiers: | B | Analyte detected in the associated Method Blank | C | Calculated Value |
| | E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| | J | Analyte detected below quantitation limits | L | Analyzed by another laboratory |
| | M | Value exceeds Monthly Ave or MCL or is less than LCL | ND | Not Detected at the Reporting Limit |
| | O | Outside the Range of Dilutions | S | Spike Recovery outside accepted recovery limits |
| | X | Matrix Effect | | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-014
ClientSample ID: 16-W4744 MW2-90
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 11:49:00 AM
DateReceived: 10/18/2016 11:43:00 AM
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	10/31/2016 1552 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552 MB
Radium 228	-4.3	pCi/L		1	Ga-Tech	11/13/2016 2040 MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/13/2016 2040 MB

These results apply only to the samples tested.

RL - Reporting Limit

- | | | |
|--------------------|--|--|
| Qualifiers: | B Analyte detected in the associated Method Blank | C Calculated Value |
| | E Value above quantitation range | H Holding times for preparation or analysis exceeded |
| | J Analyte detected below quantitation limits | L Analyzed by another laboratory |
| | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit |
| | O Outside the Range of Dilutions | S Spike Recovery outside accepted recovery limits |
| | X Matrix Effect | |

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 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-015
ClientSample ID: 16-W4745 MW3-30
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/12/2016 10:12:00 AM
DateReceived: 10/18/2016 11:43:00 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
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
X Matrix Effect

- C Calculated Value
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

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



Sample Analysis Report

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

Date Reported 11/16/2016
Report ID S1610252001

ProjectName: 201682-3374
Lab ID: S1610252-016
ClientSample ID: 16-W4746 MW104
COC: 201682-3374

WorkOrder: S1610252
CollectionDate: 10/13/2016 1:15:00 PM
DateReceived: 10/18/2016 11:43:00 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
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
X Matrix Effect

- C Calculated Value
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

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



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1610252
Project: 201682-3374

Date: 11/16/2016
Report ID: S1610252001

Radium 228 by Ga/Tech	Sample Type	MBLK	Units: pCi/L				
MB-396 (11/15/16 10:41)	RunNo:	140855	PrepDate:	10/26/16 14:00	BatchID:	12533	
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-396 (11/11/16 16:26)	RunNo:	140855	PrepDate:	10/26/16 14:00	BatchID:	12533	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	38	1	39.1	98.0	61.3 - 120		

Radium 228 by Ga/Tech	Sample Type	MS	Units: pCi/L				
MS-396 (11/11/16 22:35)	RunNo:	140855	PrepDate:	10/26/16 14:00	BatchID:	12533	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	37	1	39.1	ND	93.3	64.3 - 120	

Radium 228 by Ga/Tech	Sample Type	MSD	Units: pCi/L				
MSD-396 (11/12/16 01:39)	RunNo:	140855	PrepDate:	10/26/16 14:00	BatchID:	12533	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	40	1	37	8.14	101	20	

Radium 226 in Water -	Sample Type	MBLK	Units: pCi/L				
MB-1678 (10/28/16 14:58)	RunNo:	140308	PrepDate:	10/24/16 0:00	BatchID:	12475	
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-1678 (10/28/16 14:58)	RunNo:	140307	PrepDate:	10/24/16 0:00	BatchID:	12475	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.7	0.2	5.99	95.7	67.1 - 122		

Radium 226 in Water -	Sample Type	LCSD	Units: pCi/L				
LCSD-1678 (10/28/16 14:58)	RunNo:	140307	PrepDate:	10/24/16 0:00	BatchID:	12475	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.1	0.2	5.7	6.41	102	20	

Radium 226 in Water -	Sample Type	MS	Units: pCi/L				
S1610252-003AMS (10/31/16 15:51)	RunNo:	140414	PrepDate:	10/26/16 0:00	BatchID:	12480	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	10.6	0.2	12	0.9	80.8	65 - 131	

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - 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
 - E Value above quantitation range
 - J Analyte detected below quantitation limits
 - ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits
 - X Matrix Effect



LABORATORIES, Inc.
 2616 E Broadway Ave
 Bismarck, ND 58501

Chain of Custody Record

Phone: (701) 258-9720

Toll Free: (800) 279-6885

Fax: (701) 258-9724

201682-3374

Company Name and Address: <u>MVTL</u> <u>2616 E Broadway</u> <u>Bismarck, ND 58501</u>	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above): <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 10/13/2016
	Project Name/Number:	Purchase Order #: BL5688

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
51610252												
001	16-W4731	Field Blank 1		10/12/16								Ra226 & Ra228 on all
002	16-W4732	Dup 1		10/12/16								
003	16-W4733	MW101		10/12/16	1555							
004	16-W4734	MW102		10/12/16	1141							
005	16-W4735	MW103		10/12/16	942							
006	16-W4736	MW44R		10/12/16	807							
007	16-W4737	MW70		10/12/16	1342							
008	16-W4738	Field Blank 2		10/13/16								
009	16-W4739	Dup 2		10/13/16								
010	16-W4740	MW13		10/13/16	813							

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

4 coolers

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
C. Jackson	10/13/16	1700		Kathy Boyd	10.13.16	11:43
2.						13.6
						13.7
						13.6
						13.4



LABORATORIES, Inc.
 2616 E Broadway Ave
 Bismarck, ND 58501

Chain of Custody Record

201682-3374

Company Name and Address: MVTL 2616 E Broadway Bismarck, ND 58501		Account #:	Phone #: 701-258-9720
Billing Address (indicate if different from above): PO Box 249 New Ulm, MN 56073		Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
		Name of Sampler:	E-mail: ccarroll@mvtl.com For e-mail report check box <input type="checkbox"/>
		Quote Number	Date Submitted: 10/13/2016
		Project Name/Number:	Purchase Order #: BL5688

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
81610252 011	16-W4741	MW80R		10/13/16	952							Ra226 & Ra228 on all
012	16-W4742	MW105		10/13/16	1157							
013	16-W4743	MW33		10/13/16	845							
014	16-W4744	MW2-90		10/13/16	1149							
015	16-W4745	MW3-90	012/16	10/13/16	1012							
016	16-W4746	MW104	Acc 30NW16	10/13/16	1315							

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
C. Jackson	10/13/16	1700		Rodney Boyd	10.18.16	11:43 13.6 °C
2.						13.7

4 cooles
 13.6
 13.4

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darren Mesman

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration

Date: 13 Oct 16 Time: 0711

	pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/-
Buffer 7		<u>16.15</u>	<u>6.97</u>	<u>7.00</u>	6.95-7.05	<u>-47.3</u>	0 +/- 50
Buffer 10		<u>16.32</u>	<u>10.08</u>	<u>10.01</u>	9.95-10.05	<u>-225.1</u>	-180 +/- 50
Conductivity							Check
Buffer 10000		<u>16.12</u>	<u>10038</u>	<u>10007</u>	±10%	Buffer 5000	<u>4980</u>
ORP							
231 mV @ 25C		<u>16.24</u>	<u>232.9</u>	<u>231.0</u>	±10 mV		
DO							
		<u>16.61</u>	<u>7.52</u>	<u>9.02</u>	Barometric Pressure (mm Hg)		
					mg/L	<u>713.7</u>	

Post Site Check

Time: 1330

	pH	Temp °C	Reading
Buffer 7		<u>14.50</u>	<u>6.97</u>
Conductivity			
Buffer 5000		<u>12.77</u>	<u>4975</u>

Date: _____ Time: _____

	pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/-
Buffer 7					6.95-7.05		0 +/- 50
Buffer 10					9.95-10.05		-180 +/- 50
Conductivity							Check
Buffer 10000					±10%	Buffer 5000	
ORP							
231 mV @ 25C					±10 mV		
DO							
					Barometric Pressure (mm Hg)		
					mg/L		

Time: _____

	pH	Temp °C	Reading
Buffer 7			
Conductivity			
Buffer 5000			

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Jeremy Pleye

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration

Date: 12 Oct 16

Time: 0640

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH						
Buffer 7	19.15	7.03	7.00	6.95-7.05	-29.5	0 +/- 50
Buffer 10	19.19	10.07	10.00	9.95-10.05	-205.9	-180 +/- 50
Conductivity						Check
Buffer 10000	7.64	10414	10000	±10%	Buffer-5000	4995
ORP						
231 mV @ 25C	18.67	226.4	237.5	±10 mV		
DO						
	15.70	144.4%	106.5%		Barometric Pressure (mm Hg)	771.08
					mg/L	

Post Site Check

Time: 1706

	Temp °C	Reading
pH		
Buffer 7	19.02	7.02
Conductivity		
Buffer 5000	16.11	4998

Date: 13 Oct 16

Time: 0700

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH						
Buffer 7	20.07	6.99	7.00	6.95-7.05	-28.8	0 +/- 50
Buffer 10	19.83	10.00	10.00	9.95-10.05	-205.7	-180 +/- 50
Conductivity						Check
Buffer 10000	20.54	9751	9999	±10%	Buffer 5000	4989
ORP						
231 mV @ 25C	20.51	232.9	237.5	±10 mV		
DO						
	27.93	92.4%	99.8%		Barometric Pressure (mm Hg)	758.17
					mg/L	

Time: 1330

	Temp °C	Reading
pH		
Buffer 7	19.96	7.01
Conductivity		
Buffer 5000	19.87	5002



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2016
Sample ID: Mw 101
Sampling Personal: Jeremy Meyer

Weather Conditions: Temp: 45 °F Wind: S @ 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:	37.12 ft	
Total Well Depth:	ft	
Well Volume:	liters	
Depth to Top of Pump:	ft	
Water Level After Sample:	42.60 ft	
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>4</u> sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: <u>56</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: <u>35</u>
Duplicate Sample ID:	Pumping Rate: <u>100</u> mL/min	
Purge Date:	<u>12 Oct 16</u>	Time Purging Began: <u>1435</u> am/pm
Well Purged Dry?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>12 Oct 16</u>	Time of Sampling: <u>1555</u> am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
1	1440	9.14	4673	6.77	3.35	34.8	212.0	38.35	500	Clear
2	1455	8.93	4654	6.76	2.41	12.8	31.7	39.58	1500	Clear
3	1450 1510	8.97	4646	6.76	2.53	18.3	13.2	40.07	1500	Clear
4	1455 1525	9.12	4662	6.76	2.70	21.3	14.6	40.73	1500	Clear
5	1530	9.07	4676	6.75	2.72	25.2	11.5	40.89	500	Clear
6	1535	8.99	4680	6.75	2.67	24.2	8.75	41.05	500	Clear
7	1540	9.05	4678	6.76	2.68	21.4	7.23	41.24	500	Clear
8	1545	9.01	4682	6.76	2.64	18.4	5.92	41.40	500	Clear
9	1550	9.04	4687	6.76	2.62	15.2	4.70	41.48	500	Clear
10	1555	9.12	4690	6.76	2.60	13.6	4.08	41.58	500	Clear

Stabilized: Yes No

Total Volume Removed: 8000 mL

Comments:



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2016
 Sample ID: MW 102
 Sampling Personal: Jessy Meyer

Weather Conditions: Temp: 45 °F Wind: N 05-10 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:	18.13	ft
Total Well Depth:	—	
Well Volume:	—	
Depth to Top of Pump:	—	
Water Level After Sample:	22.81	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 4 sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Recover: 56 sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PSI: 20
Duplicate Sample ID:	Du 1	Pumping Rate: 100 mL/min
Purge Date:	12 Oct 16	Time Purging Began: 1051 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	12 Oct 16	Time of Sampling: 1141 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	1056	8.74	9510	6.91	2.44	-46.4	3.38	19.16	500	Clear
2	1101	8.77	9438	6.87	2.44	-43.8	3.62	19.49	500	Clear
3	1106	8.84	9179	6.83	2.49	-30.6	2.32	19.64	500	clear
4	1111	8.88	8914	6.82	2.51	-27.8	1.93	19.94	500	clear
5	1116	8.90	8681	6.81	2.52	-27.0	1.44	20.04	500	clear
6	1121	8.93	8377	6.81	2.56	-28.1	0.85	20.26	500	Clear
7	1126	8.97	7902	6.82	2.61	-29.9	0.63	20.56	500	clear
8	1131	8.86	7573	6.84	3.07	-27.1	0.52	20.72	500	clear
9	1136	8.83	7559	6.85	3.28	-24.6	0.48	20.80	500	clear
10	1141	8.82	7677	6.86	3.27	-25.7	0.46	20.88	500	clear

Stabilized: Yes No

Total Volume Removed: 5000 mL

Comments:



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2016
 Sample ID: MW103
 Sampling Personal: Jerry

Weather Conditions: Temp: 40 °F Wind: NOS-10 Precip: Sunny / Partly Cloudy (Cloudy)

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
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:	33.25 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	37.36 ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	4 sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	56 sec.
Duplicate Sample?:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	PSI:	25
Duplicate Sample ID:			Pumping Rate:	100 mL/min
Purge Date:	12 Oct 16	Time Purging Began:	0907	am/pm
Well Purged Dry?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Time Purged Dry:	— am/pm
Sample Date:	12 Oct 16	Time of Sampling:	0942	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
1	0912	7.80	4849	6.74	5.21	232.8	2.72	34.21	500	Clear
2	0917	7.76	4883	6.75	5.63	231.7	2.81	34.43	500	Clear
3	0922	7.84	4891	6.75	5.69	230.8	1.92	34.81	500	Clear
4	0927	7.81	4891	6.75	5.66	230.3	1.07	35.06	500	Clear
5	0932	7.79	4887	6.74	5.63	229.8	1.21	35.35	500	Clear
6	0937	7.76	4883	6.74	5.59	229.3	1.38	35.39	500	Clear
7	0942	7.83	4871	6.74	5.44	227.8	1.47	35.52	500	Clear
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 3500 mL

Comments:



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2016
 Sample ID: Plw44R
 Sampling Personal: Jeremy Pluy

Weather Conditions: Temp: 40 °F Wind: N05-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Casing Straight?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Grout Seal Intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	28.71 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	28.82 ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	4 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Recover:	56 sec.
Duplicate Sample?:	<input type="radio"/> Yes	<input checked="" type="radio"/> No	PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	12 Oct 16	Time Purging Began:	0747	am/pm
Well Purged Dry?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	12 Oct 16	Time of Sampling:	0807	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ #	Time									
1	0752	7.54	8884	6.56	3.35	252.6	1.05	28.81	500	Clear
2	0757	7.70	8849	6.57	2.89	251.3	0.63	28.82	500	Clear
3	0802	7.61	8835	6.58	2.80	249.7	0.35	28.81	500	Clear
4	0807	7.52	8838	6.58	2.71	248.5	0.33	28.82	500	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000 mL

Comments:



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2016
 Sample ID: MW70
 Sampling Personal: [Signature]

Weather Conditions: _____ Temp: 45 °F Wind: S @ 5-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" 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:	21.62	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	—	
Water Level After Sample:	24.30	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>4</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Recover: <u>56</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: <u>25</u>
Duplicate Sample ID:	—	Pumping Rate: <u>100</u> mL/min
Purge Date:	<u>12 Oct 16</u>	Time Purging Began: <u>1322</u> am/pm
Well Purged Dry?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>12 Oct 16</u>	Time of Sampling: <u>1347</u> am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	1327	8.52	3942	7.02	2.55	43.7	3.86	22.09	500	Clear
2	1332	8.30	3940	7.02	2.37	46.9	2.27	22.15	500	Clear
3	1337	8.33	3927	7.01	2.36	51.5	1.37	22.20	500	Clear
4	1342	8.26	3935	7.02	2.36	54.3	0.60	22.23	500	Clear
5	1347	8.32	3932	7.01	2.34	56.5	0.63	22.33	500	Clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2016
 Sample ID: MW 13
 Sampling Personal: Jeryph

Weather Conditions: Temp: 30 °F Wind: NOS-10 Precip: Sunny ~~Partly Cloudy~~ Cloudy

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" 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:	30.52	ft
Total Well Depth:	—	
Well Volume:	—	
Depth to Top of Pump:	—	
Water Level After Sample:	31.13	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate Sample ID:	—	Purge: 7 sec.
		Recover: 56 sec.
		PSI: 20
		Pumping Rate: 100 mL/min
Purge Date:	13 Oct 16	Time Purging Began: 0753 am/pm
Well Purged Dry?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	13 Oct 16	Time of Sampling: 0813 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
										SEQ #
1	0758	6.90	10513	6.85	3.04	240.8	4.88	31.00	500	Clear
2	0803	7.03	10540	6.90	2.43	239.9	3.58	31.07	500	Clear
3	0808	7.35	10509	6.88	2.42	238.0	2.57	31.07	500	Clear
4	0813	7.39	10508	6.86	2.44	238.3	1.50	31.08	500	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No
 Comments:

Total Volume Removed: 2000 mL



Field Datasheet

Groundwater Assessment

2816 E. Broadway Ave, Bismarck, ND
Phone: (701) 258-9720

Company: MDU Heskett
Event: 2016
Sample ID: MWSOR (A) MWSOR (B)
Sampling Personal: Jerry King 13 Dec 16

Weather Conditions: Temp: 40 °F Wind: S09-10 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:	14.71		ft
Total Well Depth:			ft
Well Volume:			liters
Depth to Top of Pump:			ft
Water Level After Sample:	15.00		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	4 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover:	56 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI:	20
Duplicate Sample ID:	Day 2	Pumping Rate:	100 mL/min
Purge Date:	13 Oct 16	Time Purging Began:	0922 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	13 Oct 16	Time of Sampling:	0952 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time									clear, slightly turbid, turbid
1	0927	9.33	5693	7.11	2.86	230.3	2.03	14.98	500	Clear
2	0932	9.35	5701	7.12	2.08	228.6	1.51	15.02	500	Clear
3	0937	9.44	5688	7.12	1.96	227.3	1.24	15.04	500	Clear
4	0942	9.43	5684	7.12	1.83	228.9	1.53	15.06	500	Clear
5	0947	9.35	5696	7.12	1.75	224.4	1.58	15.04	500	Clear
6	0952	9.38	5683	7.12	1.74	223.0	1.62	15.05	500	Clear
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 3000 mL



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2016
Sample ID: MW105
Sampling Personal: *Jeremy*

Weather Conditions: Temp: 40 °F Wind: S @ 5-10 Precip: Sunny ~~Partly Cloudy~~ / Cloudy

Well Information

Well Locked?	Yes No	
Well Labeled?	<u>Yes</u> No	
Casing Straight?	<u>Yes</u> No	
Grout Seal Intact?	<u>Yes</u> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	13.44	ft
Total Well Depth:	— ft	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	13.70	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 4 sec.
Dedicated Equip?:	<u>Yes</u> No	Recover: 56 sec.
Duplicate Sample?:	Yes No	PSI: 15
Duplicate Sample ID:	—	
Pumping Rate:	100 mL/min	
Purge Date:	13 Oct 16	Time Purging Began: 1122 am/pm
Well Purged Dry?	Yes No	Time Purged Dry: — am/pm
Sample Date:	13 Oct 16	Time of Sampling: 1157 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time									clear, slightly turbid, turbid
1	1127	9.06	6314	6.80	3.13	231.7	7.69	13.74	500	Clear
2	1132	8.91	6287	6.80	1.64	228.4	4.14	13.76	500	Clear
3	1137	8.83	6465	6.80	1.49	225.3	3.11	13.76	500	Clear
4	1142	8.87	6768	6.79	1.45	222.9	2.94	13.76	500	Clear
5	1147	8.87	6935	6.78	1.46	221.3	3.61	13.77	500	Clear
6	1152	8.84	7091	6.77	1.45	219.5	3.92	13.79	500	Clear
7	1157	8.85	7202	6.77	1.45	218.0	3.83	13.80	500	Clear
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 3500 mL



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2016
 Sample ID: HW-33
 Sampling Personal: Darren Nieswanger

Weather Conditions: Temp: 23 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	<input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	No	
Casing Straight?	<input checked="" type="radio"/> Yes	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>42.32</u>	ft	
Total Well Depth:	<u>—</u>	ft	
Well Volume:	<u>—</u>	liters	
Depth to Top of Pump:	<u>44.53</u>	ft	
Water Level After Sample:	<u>42.84</u>	ft	
Measurement Method:	<u>Electric Water Level Indicator</u>		

Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings	
Sampling Method:	<u>Bladder</u>	Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes <input checked="" type="radio"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="radio"/> Yes <input checked="" type="radio"/> No	PSI:	<u>-25</u>
Duplicate Sample ID:	<u>—</u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>13 Oct 16</u>	Time Purging Began:	<u>0805</u> am/pm
Well Purged Dry?	<input checked="" type="radio"/> Yes <input checked="" type="radio"/> No	Time Purged Dry:	<u>0832</u> am/pm
Sample Date:	<u>13 Oct 16</u>	Time of Sampling:	<u>0845</u> am/pm
Bottle List:	<u>CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	0810	7.05	5586	6.56	3.81	3.2	6.20	42.90	500	<u>cl</u>
2	0815	6.79	5487	6.53	3.05	2.6	7.93	42.82	500	<u>cl</u>
3	0825	6.55	5454	6.52	3.18	45.3	4.84	42.82	1000	<u>cl</u>
4	0830	6.67	5446	6.51	3.06	46.1	3.30	42.82	500	<u>cl</u>
5	0835	6.80	5427	6.50	2.80	47.0	1.53	42.82	500	<u>cl</u>
6	0840	6.96	5412	6.50	2.92	47.9	1.52	42.82	500	<u>cl</u>
7	0845	7.32	5399	6.50	2.98	48.0	1.41	42.82	500	<u>cl</u>
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2016
Sample ID: MW 2-90
Sampling Personal: Darren Nieswong

Weather Conditions: Temp: 40 °F Wind: Light 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:	21.72 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	22.30 ft		
Water Level After Sample:	— ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	55 sec.
Dedicated Equip?:	Yes No	Recover:	5 sec.
Duplicate Sample?:	Yes No	PSI:	—
Duplicate Sample ID:	—		
Purging Date:	13 Oct 16	Time Purging Began:	1119 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	13 Oct 16	Time of Sampling:	1149 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric		

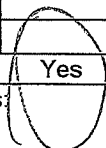
Field Measurements

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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1124	8.71	7677	6.93	5.40	57.1	0.76	21.92	500	cl
2	1129	8.30	7680	6.87	5.68	61.0	0.47	21.93	500	cl
3	1134	8.28	7649	6.88	4.28	62.0	0.52	22.10	500	cl
4	1139	8.09	7639	6.87	3.75	63.2	0.29	22.04	500	cl
5	1144	8.07	7623	6.87	3.63	63.7	0.30	22.00	500	cl
6	1149	8.29	7601	6.87	3.52	63.9	0.24	22.04	500	cl
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 3000 mL

Comments:





Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett

Event: 2016

Sample ID: MW 3-90

Sampling Personal: Darren Nicewang

Weather Conditions: Temp: 27 °F Wind: Light 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:	19.55 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	20.16 ft		
Water Level After Sample:	19.63 ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 sec.
Dedicated Equip?:	Yes No	Recover: 55 sec.
Duplicate Sample?:	Yes No	PSI: —
Duplicate Sample ID:	—	Pumping Rate: 100 mL/min
Purge Date:	12 Oct 16	Time Purging Began: 0947 am/pm
Well Purged Dry?:	Yes No	Time Purged Dry: — am/pm
Sample Date:	12 Oct 16	Time of Sampling: 1012 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
1	0952	8.08	5287	6.80	2.82	-34.1	2.02	19.73	500	cl
2	0957	7.55	5295	6.80	2.80	-18.5	0.95	19.68	500	cl
3	1002	7.87	5297	6.79	2.83	-14.4	0.72	19.65	500	cl
4	1007	7.58	5299	6.79	2.81	-8.8	0.66	19.62	500	cl
5	1012	7.60	5289	6.79	2.85	-4.5	0.68	19.64	500	cl
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

Comments:



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2016
 Sample ID: 104
 Sampling Personal: Darren Nieswlas

Weather Conditions: Temp: 50 °F Wind: Light 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:	14.46	ft	
Total Well Depth:	-		
Well Volume:	liters		
Depth to Top of Pump:	22.15	ft	
Water Level After Sample:	14.67	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Recover: 55 sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	PSI: -
Duplicate Sample ID:		Pumping Rate: 100 mL/min
Purge Date:	13 Oct 16	Time Purging Began: 1250 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No	Time Purged Dry: - am/pm
Sample Date:	13 Oct 16	Time of Sampling: 1315 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1255	10.83	14285	6.91	5.30	74.7	1.29	14.59	500	clear
2	1300	10.54	14313	6.89	4.26	71.8	2.50	14.64	500	clear
3	1305	10.55	14283	6.90	3.95	70.7	1.70	14.65	500	clear
4	1310	10.65	14279	6.89	3.73	76.4	1.64	14.67	500	clear
5	1315	10.56	14302	6.89	3.72	70.3	1.61	14.67	500	clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

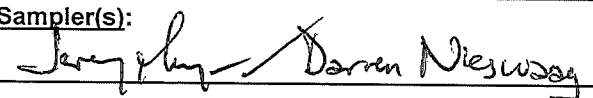
Comments:



Laboratories, Inc.

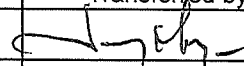

2616 E. Broadway
Bismarck, ND 58501
Phone (701) 258-9720

Chain of Custody Record

Project Name:				Name of Sampler(s):			
MDU	Heskett	CCR Radiochem	October 2016				
Report To: MDU			Carbon Copy:			Work Order Number:	
Attn: Samantha Marshall			Attn:			82-3374	
Address: 400 N. 4th St			Address:				
Phone: 701-222-7829							

Sample Information					Bottle Type					Field Parameters			Analysis	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO ₃					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W4731	Field Blank (FB) 1	12 Oct 16	NA	W		4					NA	NA	NA	MDU CCR Numerical RadChem
W4732	Dup 1	12 Oct 16	NA	W		4					NA	NA	NA	
W4733	MW101	12 Oct 16	1555	GW		4					9.12	4690	6.76	
W4734	MW102	12 Oct 16	1141	GW		4					8.82	7672	6.86	
W4735	MW103	12 Oct 16	0942	GW		4					7.83	4871	6.74	
W4736	MW44R	12 Oct 16	0807	GW		4					7.52	8838	6.58	
W4737	MW70	12 Oct 16	1347	GW		4					8.32	3932	7.01	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1		Log in	12 Oct 16 1430			13 Oct 2016 1430	6.3°C ROI TMS88
2							
3							



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett CCR Radiochem October 2016				Name of Sampler(s): <i>Sam Rhy / Darren Nieswazy</i>				
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			Carbon Copy: Attn: Address:			Work Order Number: 82-3374		

Sample Information					Bottle Type				Field Parameters			Analysis Required	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO ₃				Field Temperature °C	Field Spec. Cond.		Field pH
W4738	Field Blank (FB)2	13 Oct 16	NA	W		4				NA	NA	NA	MDU CCR Numerical RadChem
W4739	Dup 2	13 Oct 16	NA	W		4				NA	NA	NA	
W4740	MW13	13 Oct 16	0813	GW		4				7.39	10503	6.86	
W4741	* MWBR MWBR	13 Oct 16	0952	GW		4				9.38	5683	7.12	
W4742	MW105	13 Oct 16	1157	GW		4				8.85	7202	6.77	
W4743	MW33	13 Oct 16	0845	GW		4				7.32	5399	6.50	
W4744	MW2-90	13 Oct 16	1149	GW		4				8.29	7601	6.87	
W4745	MW3-90 *	13 Oct 16	1012	GW		4				7.60	5289	6.79	
W4746	MW104	13 Oct 16	1315	GW		4				10.56	14302	6.89	

Comments: * 1 - 13 Oct 16

* (A) 10/12/16
Monday 10/12/16 CE 30W/16

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Sam Rhy</i>	log in	13 Oct 16 1430	<i>Sam Rhy</i>		13 Oct 2016 1430	6.3°C ROI TMS88
2							
3							



CASE NARRATIVE – AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG: 201682-4078
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6008 through 16-W6009
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Dup 1 (16-W6008) and MW13 (16-W6009).

I. RECEIPT

- All samples were received at the laboratory on 19 Dec 2016 at 1455.
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 5.1°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

- With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

III. METHODS

- Approved methodology was followed for all sample analyses.
Methods 6010D and Method 6020B were used to analyze the metals.

IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
The recoveries for two selenium dissolved matrix spikes/matrix spike duplicates 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.



CASE NARRATIVE – AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG: 201682-4078
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6008 through 16-W6009
Page 2 of 2

- 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.
- Recovery for one molybdenum total matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
- The recoveries for two beryllium total matrix spikes duplicates were outside the acceptable limits. Recoveries of the matrix spikes were acceptable. RPD for the recoveries was within limits. Data was accepted based on acceptable recovery of the LCS. No further action was taken.

V. REPORTING

- Per email dated 9 Feb 2017 from Terri Olson at Barr, the data package was amended to remove extraneous QC samples from the QC report.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 22 Feb 17
Claudette Carroll - MVTL Bismarck Laboratory Manager



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.mvtl.com

MEMBER
ACIL

Quality Control Report – Amended 22 Feb 2017

Lab IDs: 16-W6008 to 16-W6009

Project: MDU Heskett CCR

Work Order: 201682-4078

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	104	80-120	0.100	16W6027q	< 0.001	0.1074	107	75-125	0.1074	0.1056	106	1.7	20	-	-	< 0.001
						< 0.001	0.1120	112	75-125	0.1120	0.1136	114	1.4	20	-	-	
Antimony - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.001	0.5586	112	75-125	0.5586	0.5452	109	2.4	20	-	-	< 0.001
		107	80-120	0.400	16W6126q	< 0.001	0.4106	103	75-125	0.4106	0.4476	112	8.6	20	-	-	< 0.001
		111	80-120	0.400	16W6132q	< 0.001	0.4598	115	75-125	0.4598	0.4642	116	1.0	20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1154	115	75-125	0.1154	0.1112	111	3.7	20	-	-	< 0.002
						< 0.002	0.1182	118	75-125	0.1182	0.1193	119	0.9	20	-	-	
Arsenic - Total mg/l	0.1000	112	80-120	0.500	16W6027q	< 0.002	0.5784	116	75-125	0.5784	0.5630	113	2.7	20	-	-	< 0.002
		108	80-120	0.400	16W6126q	< 0.002	0.4088	102	75-125	0.4088	0.4568	114	11.1	20	-	-	< 0.002
		112	80-120	0.400	16W6132q	< 0.002	0.4748	119	75-125	0.4748	0.4778	119	0.6	20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	0.0065	0.1104	104	75-125	0.1104	0.1002	94	9.7	20	-	-	< 0.002
						0.0089	0.1267	118	75-125	0.1267	0.1266	118	0.1	20	-	-	
Barium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	0.0070	0.5200	103	75-125	0.5200	0.5306	105	2.0	20	-	-	< 0.002
		99	80-120	0.400	16W6126q	< 0.002	0.3976	99	75-125	0.3976	0.4676	117	16.2	20	-	-	< 0.002
		101	80-120	0.400	16W6132q	0.0232	0.4460	106	75-125	0.4460	0.5030	120	12.0	20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	< 0.0005	0.1235	124	75-125	0.1235	0.1122	112	9.6	20	-	-	< 0.0005
											0.1312		0.1322		0.8	20	-
Beryllium - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.0005	0.5952	119	75-125	0.5952	0.5908	118	0.7	20	-	-	< 0.0005
		108	80-120	0.400	16W6126q	< 0.0005	0.4442	111	75-125	0.4442	0.5184	130	15.4	20	-	-	< 0.0005
		111	80-120	0.400	16W6132q	< 0.0005	0.4942	124	75-125	0.4942	0.5346	134	7.9	20	-	-	< 0.0005
Boron - Dissolved mg/l	0.40	115	80-120	0.400	16-W5963	< 0.1	0.45	112	75-125	0.45	0.46	115	2.2	20	-	-	< 0.1
		115	80-120													-	-
Boron - Total mg/l	0.40	115	80-120	0.400	16-W5963	0.12	0.51	97	75-125	0.51	0.51	97	0.0	20	-	-	< 0.1
		115	80-120													-	-
Cadmium - Dissolved mg/l	0.0160	103	80-120	0.100	16W6027q	< 0.0005	0.1002	100	75-125	0.1002	0.1006	101	0.4	20	-	-	< 0.0005
						< 0.0005	0.1060	106	75-125	0.1060	0.1079	108	1.8	20	-	-	



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Quality Control Report

Lab IDs: 16-W6008 to 16-W6009

Project: MDU Heskett CCR

Work Order: 201682-4078

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
Cadmium - Total mg/l	0.1000	119	80-120	0.500	16W6027q	< 0.0005	0.5794	116	75-125	0.5794	0.5494	110	5.3	20	-	-	< 0.0005
	0.1000	110	80-120	0.400	16W6126q	< 0.0005	0.4290	107	75-125	0.4290	0.4758	119	10.3	20	-	-	
	0.1000	116	80-120	0.400	16W6132q	< 0.0005	0.4688	117	75-125	0.4688	0.4662	117	0.6	20	-	-	
Calcium - Dissolved mg/l	20.0	100	80-120	1000	16W6027q	431	1340	91	75-125	1340	1340	91	0.0	20	-	-	< 1
				100	16D5134q	61.5	154	92	75-125	154	153	92	0.7	20	-	-	
Calcium - Total mg/l	20.0	100	80-120	500	16W6022q	545	990	89	75-125	990	1000	91	1.0	20	-	-	< 1
Chloride mg/l	30.0	83	80-120	300	16-D5069	34.4	294	87	80-120	294	285	84	3.1	20	-	-	1.7
	30.0	88	80-120														< 1
	30.0	89	80-120														< 1
																	< 1
Chromium - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1086	109	75-125	0.1086	0.1057	106	2.7	20	-	-	< 0.002
				0.100	16W6119q	0.0024	0.1142	112	75-125	0.1142	0.1165	114	2.0	20	-	-	
Chromium - Total mg/l	0.1000	107	80-120	0.500	16W6027q	< 0.002	0.5284	106	75-125	0.5284	0.5096	102	3.6	20	-	-	< 0.002
	0.1000	101	80-120	0.400	16W6126q	< 0.002	0.3858	96	75-125	0.3858	0.4254	106	9.8	20	-	-	
	0.1000	103	80-120	0.400	16W6132q	< 0.002	0.4302	108	75-125	0.4302	0.4292	107	0.2	20	-	-	
	0.1000	102	80-120	0.100	16W6128Q	0.0048	0.1013	96	75-125	0.1013	0.1015	100	3.59	20	-	-	
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1050	105	75-125	0.1050	0.1021	102	2.8	20	-	-	< 0.002
				0.100	16W6119q	< 0.002	0.1060	106	75-125	0.1060	0.1088	109	2.6	20	-	-	
Cobalt - Total mg/l	0.1000	108	80-120	0.500	16W6027q	< 0.002	0.5316	106	75-125	0.5316	0.5120	102	3.8	20	-	-	< 0.002
	0.1000	101	80-120	0.400	16W6126q	< 0.002	0.3908	98	75-125	0.3908	0.4402	110	11.9	20	-	-	
	0.1000	105	80-120	0.400	16W6132q	< 0.002	0.4316	108	75-125	0.4316	0.4326	108	0.2	20	-	-	
Fluoride mg/l	0.50	102	90-110	0.500	16-W6009	0.93	1.26	66	80-120	1.26	1.29	72	2.4	20	-	-	< 0.1
	0.50	98	90-110														< 0.1
Lead - Dissolved mg/l	0.0160	106	80-120	0.100	16W6027q	0.0007	0.0958	95	75-125	0.0958	0.0872	86	9.4	20	-	-	< 0.0005
	0.0160	100	80-120	0.100	16W6119q	< 0.0005	0.1048	105	75-125	0.1048	0.1070	107	2.1	20	-	-	



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Quality Control Report

Lab IDs: 16-W6008 to 16-W6009

Project: MDU Heskett CCR

Work Order: 201682-4078

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
Lead - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.0005	0.4706	94	75-125	0.4706	0.4902	98	4.1	20	-	-	< 0.0005
	0.1000	97	80-120	0.400	16W6126q	< 0.0005	0.3828	96	75-125	0.3828	0.4424	111	14.4	20	-	-	
	0.1000	101	80-120	0.400	16W6132q	< 0.0005	0.3892	97	75-125	0.3892	0.4374	109	11.7	20	-	-	
Lithium - Dissolved mg/l	0.40	105	80-120	0.400	16-W5963	< 0.1	0.38	95	75-125	0.38	0.37	92	2.7	20	-	-	< 0.1
	0.40	105	80-120												-	-	
Lithium - Total mg/l	0.40	105	80-120	0.400	16-W5963	< 0.1	0.42	105	75-125	0.42	0.43	108	2.4	20	-	-	< 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	1000	16W6027q	1010	1890	88	75-125	1890	1880	87	0.5	20	-	-	< 1
				100	16D5134q	26.4	123	97	75-125	123	123	97	0.0	20	-	-	
Magnesium - Total mg/l	20.0	104	80-120	500	16W6022q	477	940	93	75-125	940	950	95	1.1	20	-	-	< 1 < 1 < 1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	16-W5961	< 0.0002	0.0019	95	70-130	0.0019	0.0018	90	5.4	20	-	-	< 0.0002
				0.002	16-W6025	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	
Mercury - Total mg/l	0.0020	95	85-115	0.002	AA66354 16-W6113	< 0.0002 < 0.0002	0.0019 0.0019	95 95	70-130 70-130	0.0019 0.0019	0.0020 0.0020	100 100	5.1 5.1	20 20	- -	- -	< 0.0002
Molybdenum - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1150	115	75-125	0.1150	0.1090	109	5.4	20	-	-	< 0.002
				0.100	16W6119q	0.0033	0.1274	124	75-125	0.1274	0.1254	122	1.6	20	-	-	
Molybdenum - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.002	0.5704	114	75-125	0.5704	0.5564	111	2.5	20	-	-	< 0.002
	0.1000	98	80-120	0.400	16W6126q	< 0.002	0.4002	100	75-125	0.4002	0.4632	116	14.6	20	-	-	
	0.1000	99	80-120	0.400	16W6132q	< 0.002	0.4614	115	75-125	0.4614	0.5072	127	9.5	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	7.1	7.2	-	1.4	20	-	-	-
Potassium - Dissolved mg/l	10.0	88	80-120	200	16W6027q	25.7	217	96	75-125	217	220	97	1.4	20	-	-	< 1
				20.0	16D5134q	5.1	24.2	96	75-125	24.2	24.3	96	0.4	20	-	-	
Potassium - Total mg/l	10.0	93	80-120	100	16W6022q	20.2	118	98	75-125	118	119	99	0.8	20	-	-	< 1 < 3 < 1



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Page: 4 of 4

Quality Control Report

Lab IDs: 16-W6008 to 16-W6009

Project: MDU Heskett CCR

Work Order: 201682-4078

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
Selenium - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	0.0853 0.1386	0.2320 0.3296	147 191	75-125 75-125	0.2320 0.3296	0.2163 0.3082	131 170	7.0 6.7	20 20	- -	- -	< 0.002
Selenium - Total mg/l	0.1000	102	80-120	0.500	16-W6027	0.0778	0.6528	115	75-125	0.6528	0.6284	110	3.8	20	-	-	< 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	1000 100	16W6027q 16D5134q	1020 101	1900 194	88 93	75-125 75-125	1900 194	1900 194	88 93	0.0 0.0	20 20	- -	- -	< 1
Sodium - Total mg/l	20.0	97	80-120	500	16W6022q	240	730	98	75-125	730	735	99	0.7	20	- - -	- - -	< 1 < 1 < 1
Sulfate mg/l	100	102	80-120	10000	16-W6009	6450	15100	86	80-120	15100	15200	88	0.7	20	-	-	< 5
Thallium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	0.0979 0.1041	98 104	75-125 75-125	0.0979 0.1041	0.0877 0.1079	88 108	11.0 3.6	20 20	- -	- -	< 0.0005
Thallium - Total mg/l	0.1000 0.1000 0.1000	105 98 100	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.4688 0.3812 0.3848	94 95 96	75-125 75-125 75-125	0.4688 0.3812 0.3848	0.4860 0.4366 0.4290	97 109 107	3.6 13.5 10.9	20 20 20	- - -	- - -	< 0.0005
Total Alkalinity mg/l CaCO3	410 410	90 91	90-110 90-110	410	16-W6007	483	842	88	80-120	842	844	88	0.24	20	90	80-120	< 20 < 20
Total Dissolved Solids mg/l	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	4350 1490 1210	4240 1520 1220	- - -	2.6 2.0 0.8	20 20 20	- - -	- - -	< 5 < 5
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	8	9	-	11.8	*	-	-	< 1

* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: C. Camp
22 Feb 17



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Page: 1 of 2

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 16 Jan 17
Lab Number: 16-W6008
Work Order #: 82-4078
Account #: 002800
Date Sampled: 19 Dec 16
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Dup 1

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	19 Dec 16	SVS
pH	* 7.2	units	N/A	SM4500 H+ B	19 Dec 16 17:00	SVS
Total Suspended Solids	10	mg/l	2	I3765-85	19 Dec 16 16:57	SVS
Total Alkalinity	485	mg/l CaCO3	20	SM2320-B	19 Dec 16 17:00	SVS
Fluoride	0.95	mg/l	0.10	SM4500-F-C	19 Dec 16 17:00	SVS
Sulfate	6010	mg/l	5.00	ASTM D516-07	5 Jan 17 13:50	EMS
Chloride	78.4	mg/l	1.0	SM4500-Cl-E	4 Jan 17 9:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	9260	mg/l	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	395	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Magnesium - Total	605	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Sodium - Total	1800	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Potassium - Total	22.7	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Lithium - Total	0.63	mg/l	0.10	6010	20 Dec 16 11:09	SZ
Boron - Total	0.82	mg/l	0.10	6010	20 Dec 16 13:54	SZ
Calcium - Dissolved	388	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	600	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	1770	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	22.4	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.67	mg/l	0.10	6010	20 Dec 16 12:11	SZ
Boron - Dissolved	0.76	mg/l	0.10	6010	20 Dec 16 15:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0074	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	0.0029	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.0396	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 12:20	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Barium - Dissolved	0.0073	mg/l	0.0020	6020	9 Jan 17 12:20	KMD

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

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 16 Jan 17
Lab Number: 16-W6008
Work Order #: 82-4078
Account #: 002800
Date Sampled: 19 Dec 16
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Dup 1

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Chromium - Dissolved	0.0025	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	13 Jan 17 11:42	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Selenium - Dissolved	0.0596	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by: Claudette K. Carroll ^{cc} 16 Jan 17

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 16 Jan 17
Lab Number: 16-W6009
Work Order #: 82-4078
Account #: 002800
Date Sampled: 19 Dec 16 11:20
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW13

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

Table with columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Lists various chemical tests like pH, Total Suspended Solids, 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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Page: 2 of 2

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 16 Jan 17
Lab Number: 16-W6009
Work Order #: 82-4078
Account #: 002800
Date Sampled: 19 Dec 16 11:20
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: MW13

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

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

* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Carroll 16 Jan 17

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



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2016
Sample ID: MW13
Sampling Personal: Jeremy Meyer

Weather Conditions: Temp: 20 °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:	30.43 ft		
Total Well Depth:	ft		
Well Volume:	liters		
Depth to Top of Pump:	ft		
Water Level After Sample:	30.91 ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<u>Yes</u>	No	Recover:	55 sec.
Duplicate Sample?:	<u>Yes</u>	No	PSI:	30
Duplicate Sample ID:	<u>Dup 1</u>		Pumping Rate:	100 mL/min
Purge Date:	19 Dec 16	Time Purging Began:	1100	am/pm
Well Purged Dry?	Yes	<u>NO</u>	Time Purged Dry:	am/pm
Sample Date:	19 Dec 16	Time of Sampling:	1120	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1105	5.11	10646	6.83	2.50	198.6	4.07	30.93	500	Clear
2	1110	4.16	10557	6.76	4.82	197.1	1.99	30.66	500	Clear
3	1115	4.29	10524	6.76	1.72	195.6	1.89	30.79	500	Clear
4	1120	3.28	10703	6.78	1.73	194.4	1.90	30.77	500	Clear
5	1125									
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000 mL

Comments:



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett CCR Groundwater 2016				Name of Sampler(s): <i>Jerry Ph...</i>			
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829				Carbon Copy: Attn: Address:			
				Work Order Number: <i>82-4078</i>			

Lab Number	Sample ID	Sample Information			Bottle Type			Field Parameters			Analysis Required	
		Date	Time	Sample Type	Gradient	500 ml HNO ₃	1 liter	500 ml HNO ₃ (filtered)	Field Temperature °C	Field Spec. Cond.		Field pH
*	Field Blank (FB)		NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
<i>W6008</i>	Dup 1	<i>19 Dec 16</i>	NA	W		X	X	X	NA	NA	NA	
<i>W6009</i>	MWB	<i>19 Dec 16</i>	<i>1120</i>	GW		X	X	X	<i>3.28</i>	<i>10403</i>	<i>6.78</i>	

Comments: ** 19 Dec 16*

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Jerry Ph...</i>	<i>begin</i>	<i>19 Dec 16 1455</i>	<i>[Signature]</i>		<i>19 Dec 2018 1455</i>	<i>5.1°C ROI TMS83</i>
2							
3							



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4079
IML Lab Reference No/SDG: S1612307
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6010 through 16-W6011
IML Laboratory Identifications: S1612307-001 through S1612307-002
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Dup 1 and MW13.

I. RECEIPT

- All samples were received at the laboratory on 19 December 2016 at 1455.
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 5.1°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 28 December 2016.
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

MVTL Lab Reference No/SDG: 201682-4079
IML Lab Reference No/SDG: S1612307
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6010 through 16-W6011
IML Laboratory Identifications: S1612307-001 through S1612307-002
Page 2 of 2

V. REPORTING

- Per email from Barr Engineering dated 10 March 2016, IML was directed to report numerical values, including negative results for both the sample results and the method analyte precision.
- Per email from Samantha Marshall with MDU, MVTL was directed to report the radium 226 and radium 228 values individually and then MDU would calculate the summation result using their database tabulations.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 30 Jan 17
Claudette Carroll - MVTL Bismarck Laboratory Manager



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Page: 1 of 1

Samantha Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Jan 17
Lab Number: 16-W6010
Work Order #: 82-4079
Account #: 002800
Date Sampled: 19 Dec 16
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: Dup 1

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			10 Jan 17	OL
Radium 228	See Attached Report			24 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

C
Claudette K. Carroll 30 Jan 17

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 Marshall
Montana Dakota Utilities
400 N. 4th
Bismarck ND 58501

Report Date: 27 Jan 17
Lab Number: 16-W6011
Work Order #: 82-4079
Account #: 002800
Date Sampled: 19 Dec 16 11:20
Date Received: 19 Dec 16 14:55
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: MW13

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.78	units	NA	SM 4500 H+ B	19 Dec 16 11:20	JSM
Temperature - Field	3.28	Degrees C	NA	SM 2550B	19 Dec 16 11:20	JSM
Conductivity - Field	10703	umhos/cm	1	EPA 120.1	19 Dec 16 11:20	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				24 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll ^{CC} *30 Jan 17*

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: 1/27/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201682-4079
Lab Order: S1612307

CASE NARRATIVE
Report ID: S1612307001

Samples 16-W6010 Dup 1, and 16-W6011 MW13 were received on December 28, 2016.

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 1/27/2017
Report ID S1612307001

ProjectName: 201682-4079
Lab ID: S1612307-001
ClientSample ID: 16-W6010 Dup 1
COC: 201682-4079

WorkOrder: S1612307
CollectionDate: 12/19/2016
DateReceived: 12/28/2016 11:27:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.5	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1211	MB
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	01/10/2017 1211	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	01/24/2017 042	WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/24/2017 042	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
 - J Analyte detected below quantitation limits
 - M Value exceeds Monthly Ave or MCL or is less than LCL
 - O Outside the Range of Dilutions
 - X Matrix Effect

- C Calculated Value
- 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

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 1/27/2017
Report ID S1612307001

ProjectName: 201682-4079
Lab ID: S1612307-002
ClientSample ID: 16-W6011 MW13
COC: 201682-4079

WorkOrder: S1612307
CollectionDate: 12/19/2016 11:20:00 AM
DateReceived: 12/28/2016 11:27:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radionuclides - Total

Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1211 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1211 MB
Radium 228	0.0	pCi/L		1	Ga-Tech	01/24/2017 345 WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/24/2017 345 WN

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:	B Analyte detected in the associated Method Blank	C Calculated Value
	E Value above quantitation range	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	L Analyzed by another laboratory
	M Value exceeds Monthly Ave or MCL or is less than LCL	ND Not Detected at the Reporting Limit
	O Outside the Range of Dilutions	S Spike Recovery outside accepted recovery limits
	X Matrix Effect	

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

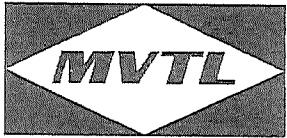
**ANALYTICAL QC SUMMARY REPORT**

CLIENT: MVTL Laboratories, Inc.
Work Order: S1612307
Project: 201682-4079

Date: 1/27/2017
Report ID: S1612307001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-412 (01/21/17 14:53)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		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-412 (01/21/17 17:54)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		38	1	40.3		93.5	64.4 - 99.5		
Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-412 (01/22/17 00:01)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		37	1	40.3	ND	92.5	55 - 113		
Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-412 (01/22/17 03:04)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		33	1	37	11.3	82.6	30		
Radium 226 in Water -		Sample Type	MBLK		Units: pCi/L				
MB-1707 (01/11/17 13:52)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.3						
Radium 226 in Water -		Sample Type	LCS		Units: pCi/L				
LCS-1707 (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89		99.8	65 - 131		
Radium 226 in Water -		Sample Type	LCSD		Units: pCi/L				
LCSD-1707 (01/10/17 12:11)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		6.1	0.3	5.9	3.30	103	20		
Radium 226 in Water -		Sample Type	MS		Units: pCi/L				
S1612304-001AMS (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89	ND	96.2	65 - 131		

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	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

Chain of Custody Record

Phone: (701) 258-9720
 Toll Free: (800) 279-6885 Fax: (701) 258-9724

201682-4079

Company Name and Address: <u>MVTL</u> <u>2616 E Broadway</u> <u>Bismarck, ND 58501</u>	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above): <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted:
	Project Name/Number:	Purchase Order #: BL5749

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
801	16-W6010	Dup 1	GW	19-Dec-16		4						Ra226 & Ra228
002	16-W6011	MW13	GW	19-Dec-16	1120	4						Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	20-Dec-16	1700		Kathy Poole	12.28.16	11:27, 04
2.						



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2016
 Sample ID: MW13
 Sampling Personal: Jeremy Meyer

Weather Conditions: Temp: 20 °F Wind: W@10-15 Precip: Sunny / Partly Cloudy (Cloudy)

Well Information

Well Locked?	Yes	<input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	No	
Casing Straight?	<input checked="" type="radio"/> Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	30.43		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	30.91		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	No	Recover:	55 sec.
Duplicate Sample?:	<input checked="" type="radio"/> Yes	No	PSI:	30
Duplicate Sample ID:	Dry 1		Pumping Rate: 100 mL/min	
Purge Date:	19 Dec 16	Time Purging Began:	1100	am/pm
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	19 Dec 16	Time of Sampling:	1120	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

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	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	1105	5.11	10646	6.83	2.50	198.6	4.07	30.93	500	Clear
2	1110	4.16	10557	6.76	1.82	197.1	1.99	30.86	500	Clear
3	1115	4.29	10524	6.76	1.72	195.6	1.89	30.79	500	Clear
4	1120	3.28	10703	6.78	1.73	194.4	1.90	30.77	500	Clear
5	1125									
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000 mL

Comments:



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett CCR Radiochem 2016				Name of Sampler(s): <i>Jerry Phay</i>				
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			Carbon Copy: Attn: Address:			Work Order Number: <i>82-4079</i>		

Sample Information						Bottle Type				Field Parameters			Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO ₃					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required	
*	Field-Blank (FB)		NA	W		4					NA	NA	NA	MDU CCR Numerical RadChem	
<i>W6010</i>	Dup 1	<i>19 Dec 16</i>	NA	W		4					NA	NA	NA		
<i>W6011</i>	<i>Hw 13</i>	<i>19 Dec 16</i>	<i>1120</i>	GW		4					<i>3.28</i>	<i>10703</i>	<i>6.78</i>		

Comments: ** d - 19 Dec 16*

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	° C
1	<i>Jerry Phay</i>	<i>Log in</i>	<i>19 Dec 16 1455</i>	<i>Jerry Phay</i>		<i>19 Dec 2016 1455</i>	<i>5.1°C ROI TMSB</i>
2							
3							



CASE NARRATIVE – AMENDED 28 FEB 2017

MVTL Lab Reference No/SDG: 201682-4102
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6025 through 16-W6027
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Field Blank (FB), 103, and 44R.

I. RECEIPT

- All samples were received at the laboratory on 20 Dec 2016 at 1420.
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 6.2°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

- With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

III. METHODS

- Approved methodology was followed for all sample analyses.
Methods 6010D and Method 6020B were used to analyze the metals.

IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.



CASE NARRATIVE – AMENDED 28 FEB 2017

MVTL Lab Reference No/SDG: 201682-4102
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6025 through 16-W6027
Page 2 of 2

- The recoveries for two selenium dissolved matrix spikes/matrix spike duplicates 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.
- Recovery for one molybdenum total matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
- The recoveries for two beryllium total matrix spikes duplicates were outside the acceptable limits. Recoveries of the matrix spikes were acceptable. RPD for the recoveries was within limits. Data was accepted based on acceptable recovery of the LCS. No further action was taken.

V. REPORTING

- Per email dated 9 Feb 2017 from Terri Olson at Barr, the data package was amended to remove extraneous QC samples from the QC report.
- Sample 16-W6025 was amended on 28 Feb 2017. TDS less than result was changed to reflect new method reporting limit for analyte.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 28 FEB 17
Claudette Carroll - MVTL Bismarck Laboratory Manager



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Quality Control Report – Amended 28 Feb 2017

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

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	104	80-120	0.100	16W6027q	< 0.001	0.1074	107	75-125	0.1074	0.1056	106	1.7	20	-	-	< 0.001
				0.100	16W6119q	< 0.001	0.1120	112	75-125	0.1120	0.1136	114	1.4	20	-	-	
Antimony - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.001	0.5586	112	75-125	0.5586	0.5452	109	2.4	20	-	-	< 0.001
	0.1000	107	80-120	0.400	16W6126q	< 0.001	0.4106	103	75-125	0.4106	0.4476	112	8.6	20	-	-	
	0.1000	111	80-120	0.400	16W6132q	< 0.001	0.4598	115	75-125	0.4598	0.4642	116	1.0	20	-	-	
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1154	115	75-125	0.1154	0.1112	111	3.7	20	-	-	< 0.002
				0.100	16W6119q	< 0.002	0.1182	118	75-125	0.1182	0.1193	119	0.9	20	-	-	
Arsenic - Total mg/l	0.1000	112	80-120	0.500	16W6027q	< 0.002	0.5784	116	75-125	0.5784	0.5630	113	2.7	20	-	-	< 0.002
	0.1000	108	80-120	0.400	16W6126q	< 0.002	0.4088	102	75-125	0.4088	0.4568	114	11.1	20	-	-	
	0.1000	112	80-120	0.400	16W6132q	< 0.002	0.4748	119	75-125	0.4748	0.4778	119	0.6	20	-	-	
Barium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	0.0065	0.1104	104	75-125	0.1104	0.1002	94	9.7	20	-	-	< 0.002
				0.100	16W6119q	0.0089	0.1267	118	75-125	0.1267	0.1266	118	0.1	20	-	-	
Barium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	0.0070	0.5200	103	75-125	0.5200	0.5306	105	2.0	20	-	-	< 0.002
	0.1000	99	80-120	0.400	16W6126q	< 0.002	0.3976	99	75-125	0.3976	0.4676	117	16.2	20	-	-	
	0.1000	101	80-120	0.400	16W6132q	0.0232	0.4460	106	75-125	0.4460	0.5030	120	12.0	20	-	-	
Beryllium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	< 0.0005	0.1235	124	75-125	0.1235	0.1122	112	9.6	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.0005	0.5952	119	75-125	0.5952	0.5908	118	0.7	20	-	-	< 0.0005
	0.1000	108	80-120	0.400	16W6126q	< 0.0005	0.4442	111	75-125	0.4442	0.5184	130	15.4	20	-	-	
	0.1000	111	80-120	0.400	16W6132q	< 0.0005	0.4942	124	75-125	0.4942	0.5346	134	7.9	20	-	-	
Boron - Dissolved mg/l	0.40	115	80-120	0.300	16-W6107	0.28	0.55	90	75-125	0.55	0.56	93	1.8	20	-	-	< 0.1
															-	-	< 0.1
															-	-	< 0.1
Boron - Total mg/l	0.40	110	80-120	0.400	16-W5963	< 0.1	0.44	110	75-125	0.44	0.44	110	0.0	20	-	-	< 0.1
	0.40	115	80-120	0.400	17-D2	1.01	1.40	97	75-125	1.40	1.39	95	0.7	20	-	-	< 0.1
				0.400	16-W6027	0.39	0.74	88	75-125	0.74	0.73	85	1.4	20	-	-	< 0.1
Cadmium - Dissolved mg/l	0.0160	103	80-120	0.100	16W6027q	< 0.0005	0.1002	100	75-125	0.1002	0.1006	101	0.4	20	-	-	< 0.0005
				0.100	16W6119q	< 0.0005	0.1060	106	75-125	0.1060	0.1079	108	1.8	20	-	-	



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Quality Control Report

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix $\mu\text{g/g}$ 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
Cadmium - Total mg/l	0.1000	119	80-120	0.500	16W6027q	< 0.0005	0.5794	116	75-125	0.5794	0.5494	110	5.3	20	-	-	< 0.0005
	0.1000	110	80-120	0.400	16W6126q	< 0.0005	0.4290	107	75-125	0.4290	0.4758	119	10.3	20	-	-	
	0.1000	116	80-120	0.400	16W6132q	< 0.0005	0.4688	117	75-125	0.4688	0.4662	117	0.6	20	-	-	
Calcium - Dissolved mg/l	20.0	100	80-120	1000	16W6027q	431	1340	91	75-125	1340	1340	91	0.0	20	-	-	< 1
				100	16D5134q	61.5	154	92	75-125	154	153	92	0.7	20	-	-	
Calcium - Total mg/l	20.0	102	80-120	500	16W6027q	420	850	86	75-125	850	865	89	1.7	20	-	-	< 1
Chloride mg/l	30.0	88	80-120	30.0	16-W6019	7.8	37.6	99	80-120	37.6	35.8	93	4.9	20	-	-	< 1
		89	80-120												-	-	< 1
		-	-												< 1		
Chromium - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1086	109	75-125	0.1086	0.1057	106	2.7	20	-	-	< 0.002
				0.100	16W6119q	0.0024	0.1142	112	75-125	0.1142	0.1165	114	2.0	20	-	-	
Chromium - Total mg/l	0.1000	107	80-120	0.500	16W6027q	< 0.002	0.5284	106	75-125	0.5284	0.5096	102	3.6	20	-	-	< 0.002
		101	80-120	0.400	16W6126q	< 0.002	0.3858	96	75-125	0.3858	0.4254	106	9.8	20	-	-	
		103	80-120	0.400	16W6132q	< 0.002	0.4302	108	75-125	0.4302	0.4292	107	0.2	20	-	-	
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1050	105	75-125	0.1050	0.1021	102	2.8	20	-	-	< 0.002
				0.100	16W6119q	< 0.002	0.1060	106	75-125	0.1060	0.1088	109	2.6	20	-	-	
Cobalt - Total mg/l	0.1000	108	80-120	0.500	16W6027q	< 0.002	0.5316	106	75-125	0.5316	0.5120	102	3.8	20	-	-	< 0.002
		101	80-120	0.400	16W6126q	< 0.002	0.3908	98	75-125	0.3908	0.4402	110	11.9	20	-	-	
		105	80-120	0.400	16W6132q	< 0.002	0.4316	108	75-125	0.4316	0.4326	108	0.2	20	-	-	
Fluoride mg/l	0.50	98	90-110	0.500	16-M4090	0.71	1.19	96	80-120	1.19	1.20	98	0.8	20	-	-	< 0.1
		100	90-110	0.500	16-W6025	< 0.1	0.50	100	80-120	0.50	0.52	104	3.9	20	-	-	< 0.1
		-	-	0.500	16-W6027	0.67	1.11	88	80-120	1.11	1.12	90	0.9	20	-	-	< 0.1
Lead - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	0.0007	0.0958	95	75-125	0.0958	0.0872	86	9.4	20	-	-	< 0.0005
				0.100	16W6119q	< 0.0005	0.1048	105	75-125	0.1048	0.1070	107	2.1	20	-	-	



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Quality Control Report

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

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
Lead - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.0005	0.4706	94	75-125	0.4706	0.4902	98	4.1	20	-	-	< 0.0005
	0.1000	97	80-120	0.400	16W6126q	< 0.0005	0.3828	96	75-125	0.3828	0.4424	111	14.4	20	-	-	
	0.1000	101	80-120	0.400	16W6132q	< 0.0005	0.3892	97	75-125	0.3892	0.4374	109	11.7	20	-	-	
Lithium - Dissolved mg/l	0.40	105	80-120	0.200	16-W6113	< 0.1	0.20	100	75-125	0.20	0.19	95	5.1	20	-	-	< 0.1 < 0.1
Lithium - Total mg/l	0.40	105	80-120	0.400	16-W6027	1.35	1.65	75	75-125	1.65	1.68	83	1.8	20	-	-	< 0.1
	0.40	100	80-120	0.400	16-W6126	< 0.1	0.41	102	75-125	0.41	0.40	100	2.5	20	-	-	< 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	1000	16W6027q	1010	1890	88	75-125	1890	1880	87	0.5	20	-	-	< 1
				100	16D5134q	26.4	123	97	75-125	123	123	97	0.0	20	-	-	
Magnesium - Total mg/l	20.0	104	80-120	500	16W6027q	980	1380	80	75-125	1380	1400	84	1.4	20	-	-	< 1 < 1 < 1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	16-W5961	< 0.0002	0.0019	95	70-130	0.0019	0.0018	90	5.4	20	-	-	< 0.0002
	0.0020	95	85-115	0.002	16-W6025	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	< 0.0002
	0.0020	95	85-115	0.002	16-W6116	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	
Mercury - Total mg/l	0.0020	95	85-115	0.002	AA66354	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
				0.002	16-W6113	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	
Molybdenum - Dissolved mg/l	0.0160	101	80-120	0.100	16W6027q	< 0.002	0.1150	115	75-125	0.1150	0.1090	109	5.4	20	-	-	< 0.002
				0.100	16W6119q	0.0033	0.1274	124	75-125	0.1274	0.1254	122	1.6	20	-	-	
Molybdenum - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.002	0.5704	114	75-125	0.5704	0.5564	111	2.5	20	-	-	< 0.002
	0.1000	98	80-120	0.400	16W6126q	< 0.002	0.4002	100	75-125	0.4002	0.4632	116	14.6	20	-	-	
	0.1000	99	80-120	0.400	16W6132q	< 0.002	0.4614	115	75-125	0.4614	0.5072	127	9.5	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	9.0	9.1	-	1.1	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.2	8.3	-	1.2	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.2	8.2	-	0.0	20	-	-	-



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Quality Control Report

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

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 - Dissolved mg/l	10.0	88	80-120	200 20.0	16W6027q 16D5134q	25.7 5.1	217 24.2	96 96	75-125 75-125	217 24.2	220 24.3	97 96	1.4 0.4	20 20	- -	- -	< 1
Potassium - Total mg/l	10.0	87	80-120	100	16W6027q	31.2	128	97	75-125	128	130	99	1.6	20	- - -	- - -	< 1 < 1 < 1
Selenium - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	0.0853 0.1386	0.2320 0.3296	147 191	75-125 75-125	0.2320 0.3296	0.2163 0.3082	131 170	7.0 6.7	20 20	- -	- -	< 0.002
Selenium - Total mg/l	0.1000	102	80-120	0.500	16-W6027	0.0778	0.6528	115	75-125	0.6528	0.6284	110	3.8	20	-	-	< 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	1000 100	16W6027q 16D5134q	1020 101	1900 194	88 93	75-125 75-125	1900 194	1900 194	88 93	0.0 0.0	20 20	- -	- -	< 1
Sodium - Total mg/l	20.0	98	80-120	500	16W6027q	995	1380	77	75-125	1380	1420	85	2.9	20	- - -	- - -	< 1 < 1 < 1
Sulfate mg/l	100	98	80-120	100	16-W6024	< 5	93.1	93	80-120	93.1	95.4	95	2.4	20	-	-	< 5
Thallium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	0.0979 0.1041	98 104	75-125 75-125	0.0979 0.1041	0.0877 0.1079	88 108	11.0 3.6	20 20	- -	- -	< 0.0005
Thallium - Total mg/l	0.1000 0.1000 0.1000	105 98 100	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.4688 0.3812 0.3848	94 95 96	75-125 75-125 75-125	0.4688 0.3812 0.3848	0.4860 0.4366 0.4290	97 109 107	3.6 13.5 10.9	20 20 20	- - -	- - -	< 0.0005
Total Alkalinity mg/l CaCO3	410 410	91 91	90-110 90-110	410 410 410	16-W6017 16-W6026 16-W6073	876 449 < 20	1230 827 382	86 92 93	80-120 80-120 80-120	1230 827 382	1236 825 378	88 92 92	0.5 0.2 1.1	20 20 20	91 91	80-120 80-120	< 20 < 20 < 20 < 20
Total Dissolved Solids mg/l	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	4350 1490 1210	4240 1520 1220	- - -	2.6 2.0 0.8	20 20 20	- - -	- - -	< 10 < 10
Total Suspended Solids mg/l	- -	- -	- -	- -	- -	- -	- -	- -	- -	5720 5	7780 5	- -	30.5 0.0	20 *	- -	- -	< 1 < 1

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Quality Control Report

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: C. Gant
28 FEB 17