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CASE NARRATIVE

MVTL Lab Reference No/SDG:

IML Lab Reference No/SDG:

Client:

Location:

Project Identification:

MVTL Laboratory Identifications:

IML Laboratory Identifications:

Page 2 of 2

201782-0401

S1702288

Montana Dakota Utilities

MDU Heskett Ash Site

CCR February 2017

17-W414 through 17-W418

\$1702288-001 through \$1702288-005

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 Gurtl DATE: 21M1-17

Claudette Carroll - MVTL Bismarck Laboratory Manager



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



1 of 1 Page:

Report Date: 16 Mar 17 Lab Number: 17-W414 Work Order #:82-0401 Account #: 002800

Date Sampled: 21 Feb 17 9:22 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: MW13

Event and Year: Feb 2017

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228		units Degrees C umhos/cm ched Report ched Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Feb 17 21 Feb 17 21 Feb 17 14 Mar 17 11 Mar 17	9:22 9:22 9:22	JSM JSM JSM OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Cantep

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



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Samantha Marshall Montana Dakota Utilities

400 N. 4th

Bismarck ND 58501 Page: 1 of 1

Report Date: 16 Mar 17 Lab Number: 17-W415 Work Order #:82-0401 Account #: 002800

Date Sampled: 21 Feb 17 11:33 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

Project Name: MDU Heskett Sample Description: MW44R

Event and Year: Feb 2017

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.57	units	NA	SM 4500 H+ B	21 Feb 17	9:22	JSM
Temperature - Field	8.14	Degrees C	NA	SM 2550B	21 Feb 17	9:22	JSM
Conductivity - Field	9110	umhos/cm	1	EPA 120.1	21 Feb 17	9:22	JSM
Radium 226	See Atta	ached Report			14 Mar 17		OL
Radium 228	See Atta	ached Report			11 Mar 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

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

all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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1 of 1 Page:

Report Date: 16 Mar 17 Lab Number: 17-W416 Work Order #:82-0401 Account #: 002800

Date Sampled: 21 Feb 17 13:16 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: MW103

Event and Year: Feb 2017

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228		units Degrees C umhos/cm ched Report ched Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Feb 17 13:16 21 Feb 17 13:16 21 Feb 17 13:16 14 Mar 17 11 Mar 17	JSM JSM JSM OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canto

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



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Page:

1 of 1

Report Date: 16 Mar 17 Lab Number: 17-W417 Work Order #:82-0401 Account #: 002800

Date Sampled: 21 Feb 17 14:47 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: MW2-90

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	8.01 De	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Feb 17 14:47 21 Feb 17 14:47 21 Feb 17 14:47 14 Mar 17 12 Mar 17	JSM JSM JSM OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

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 con
! = Due to sample quantity + = Due to in

= Due to concentration of other analytes
+ = Due to internal standard response



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Page:

1 of 1

Report Date: 16 Mar 17 Lab Number: 17-W418 Work Order #:82-0401 Account #: 002800

Date Sampled: 21 Feb 17

Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: FB1

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			14 Mar 17	OL
Radium 228	See Attached Report			12 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

K. Canter DOMA/17 Clauditte

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 code ! = Due to sample quantity + = Due to in

publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

= Due to concentration of other analytes
+ = Due to internal standard response



Date: 3/16/2017

CLIENT:

MVTL Laboratories, Inc.

Project:

201782-0405

Lab Order:

S1702288

ASTM approved and recognized standards

CASE NARRATIVE

Report ID: S1702288001

Samples 17-W414 MW13, 17-W415 MW44R, 17-W416 MW103, 17-W417 MW2-90, and 17-W418 FB1 were received on February 24, 2017.

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

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

Page 1 of 1



Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0405

Lab ID:

S1702288-001 ClientSample ID: 17-W414 MW13

COC:

201782-0401

Date Reported

3/16/2017

Report ID

S1702288001

WorkOrder:

S1702288

CollectionDate: 2/21/2017 9:22:00 AM

DateReceived: 2/24/2017 11:12:00 AM

FieldSampler:

Matrix:

Water

Comments

d/Init
MB
MB
MB
MB
15 15 52

These results apply only to the samples tested.

Qualifiers:

- В Analyte detected in the associated Method Blank
- Value above quantitation range Ε
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 5



Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

201782-0405

Lab ID:

S1702288-002 ClientSample ID: 17-W415 MW44R

COC:

201782-0401

Date Reported

3/16/2017

Report ID

S1702288001

WorkOrder:

S1702288

CollectionDate: 2/21/2017 11:33:00 AM

DateReceived: 2/24/2017 11:12:00 AM

FieldSampler:

Matrix:

Water

Comments

Analysis	Result	Units	Oual	RL	N/I n é la a al	Date Analyzed/I	nit
Analyses	Result	Units	Qual	KL	Method	Date Analyzeu/i	1111
Radionuclides - Total							
Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	03/14/2017 1415	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/14/2017 1415	MB
Radium 228	0.7	pCi/L		1	Ga-Tech	03/11/2017 1900	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/11/2017 1900	MB

These results apply only to the samples tested.

Qualifiers:

- В Analyte detected in the associated Method Blank
- Ε Value above quantitation range
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory
- Not Detected at the Reporting Limit
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 5



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0405

Lab ID:

S1702288-003 ClientSample ID: 17-W416 MW103

201782-0401

Date Reported

3/16/2017

Report ID

S1702288001

WorkOrder:

S1702288

CollectionDate: 2/21/2017 1:16:00 PM

DateReceived:

2/24/2017 11:12:00 AM

FieldSampler:

Matrix:

Water

Commonte

COC:

Qual	RL	Method	Date Analyzed/li	nit
	0.2	SM 7500 Ra-B	03/14/2017 1415	MB
		SM 7500 Ra-B	03/14/2017 1415	MB
	1	Ga-Tech	03/11/2017 2206	MB
		Ga-Tech	03/11/2017 2206	MB
	Qual		0.2 SM 7500 Ra-B SM 7500 Ra-B 1 Ga-Tech	0.2 SM 7500 Ra-B 03/14/2017 1415 SM 7500 Ra-B 03/14/2017 1415 1 Ga-Tech 03/11/2017 2206

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 5



Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0405

Lab ID:

S1702288-004 ClientSample ID: 17-W417 MW2-90

COC:

201782-0401

Date Reported

3/16/2017

Report ID

S1702288001

WorkOrder:

S1702288

CollectionDate: 2/21/2017 2:47:00 PM

DateReceived:

2/24/2017 11:12:00 AM

FieldSampler:

Matrix: Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total			***		,		
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	03/14/2017 1415	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/14/2017 1415	MB
Radium 228	-3.3	pCi/L		1	Ga-Tech	03/12/2017 312	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	03/12/2017 312	MB

These results apply only to the samples tested.

Qualifiers:

- Analyte detected in the associated Method Blank
- Value above quantitation range F
- Holding times for preparation or analysis exceeded Η
- Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 5



Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName: Lab ID:

COC:

201782-0405

S1702288-005 ClientSample ID: 17-W418 FB1 201782-0401

Date Reported

3/16/2017

Report ID

S1702288001

WorkOrder:

S1702288

CollectionDate: 2/21/2017

DateReceived:

2/24/2017 11:12:00 AM

FieldSampler:

Matrix:

Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.19	pCi/L		0.2	SM 7500 Ra-B	03/14/2017 1415	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/14/2017 1415	MB
Radium 228	0.5	pCi/L		1	Ga-Tech	03/12/2017 517	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/12/2017 517	MB

These results apply only to the samples tested.

Qualifiers:

- В Analyte detected in the associated Method Blank
- Value above quantitation range F
- Holding times for preparation or analysis exceeded Η
- Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 5



ANALYTICAL QC SUMMARY REPORT

CLIENT:

Project:

Work Order:

MVTL Laboratories, Inc.

S1702288

201782-0405

Date: 3/16/2017

Report ID: S1702288001

Radium 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L	
MB-421 (03/10/17 15:20) Analyte	RunNo: 143832 Result	PrepDate: 03/06/17 10:00 BatchID 12925 RL Spike Ref Samp %REC % Rec Limits Quality)ual
Total Radium 228	ND	1	
Radium 228 by Ga/Tech	Sample Type LCS	Units: pCi/L	
LCS-421 (03/10/17 18:24)	RunNo: 143832	PrepDate: 03/06/17 10:00 BatchID 12925	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu	(ual
Total Radium 228	41	1 40.1 103 65.9 - 132	
Radium 228 by Ga/Tech	Sample Type LCSD	Units: pCi/L	
LCSD-421 (03/10/17 21:29)	RunNo: 143832	PrepDate: 03/06/17 10:00 BatchID 12925	
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qu)ual
Total Radium 228	43	1 41 2.96 106 20	
Radium 228 by Ga/Tech	Sample Type MS	Units: pCi/L	
S1702301-003AMS (03/13/17 05:54)	RunNo: 143832	PrepDate: 03/06/17 10:00 BatchID 12925	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q	Qual
Total Radium 228	76	1 80.1 ND 95.1 50 - 139	
Radium 228 by Ga/Tech	Sample Type MSD	Units: pCi/L	
S1702301-003AMSD (03/13/17 08:59)	RunNo: 143832	PrepDate: 03/06/17 10:00 BatchID 12925	
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qu)ual
Total Radium 228	72	1 76 6.02 89.6 20	
Radium 226 in Water -	Sample Type MBLK	Units: pCi/L	
MB-1725 (03/14/17 14:15)	RunNo: 143837	PrepDate: 03/08/17 0:00 BatchID 12923	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu	Qual
Radium 226	ND	0.2	
Radium 226 in Water -	Sample Type LCS	Units: pCi/L	
LCS-1725 (03/14/17 14:15)	RunNo: 143837	PrepDate: 03/08/17 0:00 BatchID 12923	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu	Qual
Radium 226	4.5	0.2 5.89 76.0 67.1 - 122	
Radium 226 in Water -	Sample Type MS	Units: pCi/L	
S1702301-003AMS (03/14/17 16:20)	RunNo: 143837	PrepDate: 03/08/17 0:00 BatchID 12923	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu	(ual
Radium 226	11.6	0.2 11.8 ND 98.6 65 - 131	
Radium 226 in Water -	Sample Type MSD	Units: pCi/L	
S1702301-003AMSD (03/14/17 16:20)	RunNo: 143837	PrepDate: 03/08/17 0:00 BatchID 12923	
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qu	(ual
— ———————————————————————————————————	10.9	0.2 11.6 6.41 92.5 20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
 - Spike Recovery outside accepted recovery limits



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

Chain of Custody Record

Page	1	of	1	_
. ~~~	- 4	0,	2	

	Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724							201782-0401						
Company Nam	e and Address:			Account #	:						Phone #:			
	W. 10°	A Francis			·						701-258-9720			
		VTL		Contact:							Fax #:			
		<u>Broadway</u> s, ND 58501		N 6 0	Claud	lette)				For faxed report check box			
Billing Address	s (indicate if different			Name of S	sampler:						E-mail: ccarroll@mvtl.com			
	,			Quote Nur	nber						For e-mail report check boxDate Submitted:			
		ox 249									22-Feb-17			
	<u>New Ulm</u>		Project Na	me/Numbe	er:		*********			Purchase Order #:				
			L							BL5795				
45 2.2	₩./⊋		1		<u> </u>	В	ottle	Ty	ре	Analysis				
S-17082	8-8-													
51702288							103	eq						
						pa:	Í	VOC Vials Umpreserved	ar					
IML Lab			Sample	Date	Time	ea	E	ž Zi	SS	<u>بر</u>				
					$_{\odot}$	U	, ,,							
Number	MVTL Lab Number	Client Sample ID	Туре		Sampled	Untreated	1000 ml HNO3	VOC Vials Umpreserv	Glass Jar	Other	Analysis Required			
Number	MVTL Lab Number 17-W414	Client Sample ID MW13				Untr	0001 4	VOV Ump	Glas	Oth	Analysis Required Ra226 & Ra228			
			Туре	Sampled	Sampled	Untr		NOV N	Glas	Oth				
001 002 003	17-W414	MW13	Type GW	Sampled 21-Feb-17	Sampled 922	Untr	4	Jun N	Glas	Oth	Ra226 & Ra228			
002 003 004	17-W414 17-W415	MW13 MW44R	GW GW	Sampled 21-Feb-17 21-Feb-17	922 1133	Untr	4	Jun	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228			
001 002 003	17-W414 17-W415 17-W416	MW13 MW44R MW103	GW GW GW	21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4	Jimu Nov	Glae	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
002 003 004	17-W414 17-W415 17-W416 17-W417	MW13 MW44R MW103 MW2-90	GW GW GW GW	Sampled 21-Feb-17 21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4 4	NOO	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
002 003 004	17-W414 17-W415 17-W416 17-W417	MW13 MW44R MW103 MW2-90	GW GW GW GW	Sampled 21-Feb-17 21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4 4	VOO	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
002 003 004	17-W414 17-W415 17-W416 17-W417	MW13 MW44R MW103 MW2-90	GW GW GW GW	Sampled 21-Feb-17 21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4 4	NOO N	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
002 003 004	17-W414 17-W415 17-W416 17-W417	MW13 MW44R MW103 MW2-90	GW GW GW GW	Sampled 21-Feb-17 21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4 4	OOV U	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
001 002 003 004 005	17-W414 17-W415 17-W416 17-W417 17-W418	MW13 MW44R MW103 MW2-90	GW GW GW GW	Sampled 21-Feb-17 21-Feb-17 21-Feb-17 21-Feb-17	922 1133 1316	Untr	4 4 4 4	NOO N	Glas	Oth	Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			

<u> </u>							Zeolus
Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
T. Olson	22-Feb-17	1700		Kathy Borp	2.24.17	111:12	6.4
2.							le:7



Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	MW13	
Sampling Personal:	Jeren plene	

2616 E. Broadway Ave, Bis	smarck, ND						_	Sampling P	ersonal:	Jeren	Olene		
Phone: (701) 258-9	720						-						
Weather Conditions:		Temp:	35	°F	Wind:	505-1	10		Precip:	Sun	ny / Partly C	loudy /Clo	oudy
1	Well Info	rmation						Sa	mpling l	nformati	on		
Well Locked?	Yes	No				Purgii	ng Method:	Blad	der		Co	ntrol Settin	gs
Well Labeled?	χ/es	No				Sampli	ng Method:	Blad	der		Purge:	6	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	(Yes)	No		Recover:	54	sec.
Grout Seal Intact?	(Yeş	No	Not	Visible		Duplicate	Sample?:		(NO)		PSI:	30	
Repairs Necessary:						Duplicate	Sample ID:	Dog	- 21 feb	7	Pumping R	ate: 100	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	30	.02	ft		F	Purge Date:	21 Feb	17		ing Began:	0857	<a3m pm<="" td=""></a3m>
Total W	/ell Depth:			ft		Well P	urged Dry?	Yes	No	<u> </u>	ourged Dry:		am/pm
We	II Volume:			liters		Sa	ımple Date:	21 feb17	<i></i>	Time o	f Sampling:	2590	(am/pm
Depth to Top	of Pump:		-	ft									
Water Level Afte	er Sample:	30	70	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL	Nitric (filtere	ed), 4-1L Nit	tric
Measurement Method: Electric Water Level Indicator				List:									

Field Measurements

1	lization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	०१०२	6.85	10322	6.85	4.19	257.9	3.19	30,45	500	Clear
2	0907	6.78	10350	6.85	3,57	254.B	1.56	30,40	500	Clear
3	5190	6.78	10352	6.86	3,60	252,8	0.98	30,48	500	Clea
4	0917	6,94	10357	6,86	3,66	251.1	0.80	30,51	500	Clear
5	0922	7.14	10348	6.86	3,81	251,2	0.71	32.48	500	Cler
6										
7										
8										
9	:									
10							atal Valuma			ml

Stabilized: Comments: No Total Volume Removed: 2500 mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	HWYYR
Sampling Personal:	Jevenny Men-

Phone: (701) 258-9	720									~		·	
Weather Conditions:		Temp:	40 °F		Wind:	5 65-7	0		Precip	Sunr	ny Partly C	Cloudy & Clo	oudy
	Well Info	rmation	•					Sa	mpling l	nformatio	on		
Well Locked?	Yes	10	No.			Purgir	ng Method:	Blad	lder		Control Settings		gs
Well Labeled?	∕(es⁄	No			Samplin	ng Method:	Blad	lder		Purge:	7	sec.	
Casing Straight?	t∕es	No				Dedicat	ed Equip?:	(Yes)	No		Recover:	53	sec.
Grout Seal Intact?	(es)	No	Not Visil	ole		Duplicate	Sample?:	Yes	/Nq		PSI:	30	
Repairs Necessary:						Duplicate :	Sample ID:				Pumping R	ate: / <i>0</i> D	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	2	7,22	ft		Р	urge Date:	21 feb 17		Time Purg	ing Began:	1058	@m/pm
Total W	/ell Depth:	`		ft			urged Dry?	Yes	Mg)	Time P	urged Dry:		am/pm
We	ll Volume:	<		liters		Sa	mple Date:	21 feb/7	_	Time of	Sampling:	1133	@m/pm
Depth to Top	of Pump:	4		ft									
Water Level After Sample: 27.28 ft				Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL l	Nitric (filtere	d), 4-1L Nit	ric		
Measuremen	nt Method: Electric Water Level Indicator				List:								

Field Measurements

	ization	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time	(- / - /	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1103	7.97	9144	658	5,15	237,3	23,2	27.27	500	Clear
2	1108	7,93	9119	6,57	4.57	239,5	33,8	27,27	SEO	Clear
3	1113	7.92	9119	6,57	4.65	239,4	18.6	27.27	500	Clear
4	1118	7.83	9113	6.56	4.44	239.8	12.1	27,27	CoS	Clie
5	1123	7.93	9116	6,56	4,52	239,3	11.4	27.28	SO	Clear
6	1128	B129	9112	6,57	4.60	238,2	12.3	27,28	560	Clear
7	1133	8,14	9110	6,57	4,53	2383	11.9	27,28	500	Clear
8										
9										
10 Stabilized:	(Vac)	No					otal Volume	<u> </u>		mi

Stabilized: (Yes/ No Total Volume Removed: 3500 mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	103 ,
Sampling Personal:	Jeren Many

Phone: (701) 258-9720

, , , ,													
Weather Conditions:		Temp:	40	°F	Wind:	505-10			Precip:	Suni	ny / Partly C	Cloudy/ Clo	udy
,	Well Info	rmation						Sai	npling l	nformatio	on		
Well Locked?	Yes	(No)				Purging Metho	d:	Blado	ler		Co	ntrol Setting	s
Well Labeled?	Ves	No				Sampling Metho	d:	Blado	ler		Purge:	4	sec.
Casing Straight?	(es)	No				Dedicated Equip	?:	Yes	No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not V	/isible		Duplicate Sample?):	Yes	No		PSI:	30	
Repairs Necessary:						Duplicate Sample I	D:		-		Pumping R	ate: / oン	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	32	,75	ft		Purge Dat	e: 2	1 feb 17		Time Purg	ing Began:	1231	am/pm
Total W	/ell Depth:	-		ft		Well Purged Dry		Υূes	NO)	Time F	urged Dry:		am/pm
We	Il Volume:			liters		Sample Dat	e: 2	1 feb17	-	Time of	Sampling:	1316	am/pm
Depth to Top	of Pump:			ft									
Water Level Afte	r Sample:	e: 3 6,63 ft			Bottle	CCR:	1L Raw, §	00mL Nit	irc, 500mL	Nitric (filtere	d), 4-1L Nitr	ic	
Measuremen	Measurement Method: Electric Water Level Indicator			List:									

Field Measurements

(3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pH. ±0.1	DO (mg/L) ±10%	ORP (mV)	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ#	Time	6 10								
1	1236	8,18	5049	6.74	5.44	239,4	0,77	33.05	500	Clear
2	1241	8.03	5060	6.75	5.71	243,3	0.31	33,30	500	Clean
3	1246	8,02	5064	6.74	5.70	245,5	0,23	33,67	500	Clear
4	1251	8.01	5059	6,74	5.66	246,9	0,27	34.00	500	Cles
5	1256	B. U	5067	6,75	5.95	247.2	0,51	34.30	500	Clear
6	1301	8.14	5066	6.75	5,77	235,4	0,64	34,52	500	clier
7	1306	8,13	5069	6,74	5,78	218.1	0,76	34,68	500	Cleer
8	1311	8,15	5066	6,75	5,69	203,7	0.80	34,70	500	Clear
9	1316	8.11	5067	6,74	5,73	200.1	0,72	34.80	500	Clear
10										

Stabilized: Yes No

Total Volume Removed: 4500 mL

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	2-90
Sampling Personal:	Jerrylya

2616 E. Broadway Ave, Bismarck, ND

											11 (* 10*		
Phone: (701) 258-9	720						_						
Weather Conditions:		Temp:	40°F		Wind:	505-10	2		Precip	Sun	ny / Partly C	loudy /Clo	udy
	Well Info	rmation						Sa	mpling l	nformati	on		
Well Locked?	Yes	(Ng				Purging N	/lethod:	Blad	der		Co	ntrol Setting	S
Well Labeled?	Yes	No				Sampling N	/lethod:	Blad	der		Purge:	5	sec.
Casing Straight?	(Yes	No				Dedicated I	Equip?:	(Yes)	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visil	ole >		Duplicate Sar	mple?:	Yes	Mo _s .		PSI:	Zo	
Repairs Necessary:						Duplicate Sam	nple ID:				Pumping Ra	ate: 160	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	2	D.00	ft		Purg	e Date:	21 feet/	7	Time Purg	ging Began:	1427	am/pm
Total W	Vell Depth:	-		ft		Well Purge	ed Dry?	Yes	(No)	Time F	ourged Dry:	<u> </u>	am/pm
We	ell Volume:	<		liters		Sampl	e Date:	21 feb 1	7	Time o	f Sampling:	1447	am/pm
Depth to Tor	of Pump:	100		ft									
Water Level Afte	er Sample:	20	1,45	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL	Nitric (filtere	d), 4-1L Nitr	ic
Measuremen	nt Method:	Electric W	ater Level Ind	icator		List:							

Field Measurements

(3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ#	Time				L					
1	1432	8.16	7041	6.94	4,47	224.7	0.62	20,49	500	Cleor
2	1437	7.97	7026	6.94	3.66	228,5	0,22	20,39	500	Clear
3	1442	7.98	7019	6,94	3,54	230.2	0,27	20,39	500	Clea
4	1447	8,01	7022	6,93	3,53	231,4	0.31	20.45	500	Clear
5	·									
6		:								
7										
8										
9										
10										

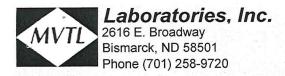
Stabilized: (Yes/ No Total Volume Removed: 2000 mL

Comments:



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

Sampling P	ersonnel: Jerig Myn			Company: MDU Heskett 2017
Well ID	Date 21 feb 7	Time	Depth to Water	Comments



Chain of Custody Record

Project Nam	e:	Event:	Work Order Number:
	MDU Heskett	Feb 2017	8 2-0401
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501	Carbon Copy: Attn: Address:	Name of Sampler(s):
phone:	701-222-7829		

	Sam	Sample Information									Fi	eld Para	meters	Analysis Analysis			
Lab Number	Sample ID	Date	Time	Sample Type		1 liter Nitric				//	Temp (°C)	Spec. Cond.	Ha	Analysis Required			
W414	Mw13	2(feb 17	0922	GW		4					7.14	10348	6.86	on d			
W415	MWYYR	21 feb 17	1133	GW		4					8,14	9418	6.57	cond 940			
W416	MW 103	2i feb17	1316	Gw		4					Bill	5067	6.74				
W417	Mw 2-90	Zi feb17	1447	GW		4					8.01	7022	6.93				
W418	FB1	21 feb17	-	W		4					_			Rad 226 & Rad 228			
	П																
														Î			

Comments: * 2 - 17 17

Relinquished By:		Sar	mple Condition:
Name:	Date/Time	Location:	Temp (°C)
1 MM	2(feb17 1617	l⊚g⊅a Walk In #2	8,0 ROI TM562 /TM588)
2			

Received	d by:
Name:	Daţe/Time
C. Can P	1621



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CASE NARRATIVE - AMENDED 6 JUL 2017 (Work Order)

MVTL Lab Reference No/SDG:

201782-0402

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W419 through 17-W423

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
MW13	17-W419
MW44R	17-W420
MW103	17-W421
MW2-90	17-W422
FB1	17-W423

I. RECEIPT

- All samples were received at the laboratory on 21 Feb17 at 1621.
- 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.
 - o Temperature of samples upon receipt was 8.0°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.
 - o 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.
 - o 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.



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Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W419 through 17-W423

Page 2 of 2

Recovery for one boron 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.

V. REPORTING

- Per email request by Terri Olson at Barr, the QC report was amended so that the matrix spike and matrix spike duplicate results line up visually on the report.
- Field conductivity for MW44R was incorrectly recorded on the COC document. The COC document has been corrected and an amended report for MW44R has been issued.
- Sample report for 17-W420 (MW44R) was amended 21 Mar 2017 to reflect correct sample identification.
- On 6 Jul 17, it was discovered that the template used to create the case narrative had an extra 7 in the work order (e.g. 2017782-0402). Case narrative has been corrected to reflect the correct work order.

All laboratory dat	a has been approved	l by MVTL Labora	atories.		
SIGNED:	Claudite	ant 0	DATE:	75117	
Claudette	Carroll - MVTI Rism	arck Laboratory	Manager		

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Quality Control Report Lab IDs: 17-W419 to 17-W423

Page: 1 of 4

Project: MDII Hagkett

Lab IDs: 17-W419 to 17-W	123	L L	oject: MI	JO rieski	eu I		work Or	rder: 201	· · · · · · · · · · · · · · · · · · ·		L				· · · · · · · · · · · · · · · · · · ·		
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	99	80-120	0.100	17W422q	< 0.001	0.1160	116	75-125	0.1160	0.1148	115	1.0	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	110	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.001 < 0.001 < 0.001	0.4354 0.4196 0.4558	109 105 114	75-125 75-125 75-125	0.4354 0.4196 0.4558	0.4320 0.4298 0.4486	108 107 112	0.8 2.4 1.6	20 20 20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	97	80-120	0.100	17W422q	< 0.002	0.1178	118	75-125	0.1178	0.1148	115	2.6	20	-	_	< 0.002
Arsenic - Total mg/l	0.1000	110	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.0056 0.0032	0.4392 0.4292 0.4696	110 106 117	75-125 75-125 75-125	0.4392 0.4292 0.4696	0.4344 0.4456 0.4682	109 110 116	1.1 3.7 0.3	20 20 20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	98	80-120	0.100	17W422q	0.0085	0.1210	112	75-125	0.1210	0.1172	109	3.2	20		_	< 0.002
Barium - Total mg/l	0.1000	99	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.1263 0.0597	0.4198 0.5472 0.4742	105 105 104	75-125 75-125 75-125	0.4198 0.5472 0.4742	0.4294 0.5602 0.4870	107 108 107	2.3 2.3 2.7	20 20 20 20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.0160	96	80-120	0.100	17W422q	< 0.0005	0.1164	116	75-125	0.1164	0.1142	114	1.9	20	_	_	< 0.000
Beryllium - Total mg/l	0.1000	105	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.0005 < 0.0005 < 0.0005	0.4218	116 105 121	75-125 75-125 75-125	0.4658 0.4218 0.4826	0.4490 0.4430 0.4732	112 111 118	3.7 4.9 2.0	20 20 20	-	-	< 0.000
Boron - Dissolved mg/l	1.00	106	80-120	1.50	17-W419	0.49	2.01	101	75-125	2.01	2.02	102	0.5	20	-	_	< 0.1
Boron - Total mg/l	0.40	100	80-120	3.00 0.400	17-W395 17-W423	18.3 < 0.1	22.0 0.39	123 98	75-125 75-125	22.0 0.39	22.3 0.40	133 100	1.4 2.5	20 20	-	-	< 0.1 < 0.1
Cadmium - Dissolved mg/l	0.0160	101	80-120	0.100	17W422q	< 0.0005	0.1065	106	75-125	0.1065	0.1071	107	0.6	20	_		< 0.000
Cadmium - Total mg/l	0.1000	112	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.0005 < 0.0005 < 0.0005	0.4470 0.4304 0.4612	112 108 115	75-125 75-125 75-125	0.4470 0.4304 0.4612	0.4470 0.4326 0.4518	112 108 113	0.0 0.5 2.1	20 20 20 20	-	-	< 0.0003
Calcium - Dissolved mg/l	20.0	102	80-120	500	17-W487	344	865	104	75-125	865	840	99	2.9	20	-	-	<1 <1

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Page: 2 of 4

Quality Control Report
Lab IDs: 17-W419 to 17-W423

Project: MDII Hockett

Lab IDs: 17-W419 to 17-W4	1423	E I	oject: M	JU Heski	511 		VOLK OI		782-0402					Ly as an incompletion	r	T	
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Calcium - Total mg/l	20.0 20.0 20.0	101 101 106	80-120 80-120 80-120	500 100 500 500 100	17-M312 17-M315 17-W420 17W424q 17-W429	136 25.5 428 144 78.0	645 127 930 625 172	102 102 100 96 94	75-125 75-125 75-125 75-125 75-125	930 625 172	945 640 172	103 99 94	1.6 2.4 0.0	20 20 20	- - - -		< 1 < 1 < 1
Chloride mg/l	30.0 30.0	88 94	80-120 80-120	30.0	17-W386	3.9	29.4	85	80-120	29.4	29.4	85	0.0	20	-	-	< 1 < 1
Chromium - Dissolved mg/l	0.0160	97	80-120	0.100	17W422q	< 0.002	0.1062	106	75-125	0.1062	0.1040	104	2.1	20	-	-	< 0.002
Chromium - Total mg/l	0.1000	101	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.0088 < 0.002	0.3948 0.3818 0.4158	99 93 104	75-125 75-125 75-125	0.3948 0.3818 0.4158	0.3848 0.3944 0.3998	96 96 100	2.6 3.2 3.9	20 20 20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.0160	96	80-120	0.100	17W422q	< 0.002	0.1039	104	75-125	0.1039	0.1030	103	0.9	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	100	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.0061 < 0.002	0.4052 0.3762 0.4164	101 93 104	75-125 75-125 75-125	0.4052 0.3762 0.4164	0.3888 0.3924 0.4042	97 97 101	4.1 4.2 3.0	20 20 20	-	-	< 0.002
Fluoride mg/l	0.50	102	90-110	0.500 0.500	17-W422 17-W429	1.00 0.12	1.43 0.63	86 102	80-120 80-120	1.43 0.63	1.44 0.64	88 104	0.7 1.6	20 20	-		< 0.1 < 0.1
Lead - Dissolved mg/l	0.0160	99	80-120	0.100	17W422q	< 0.0005	0.1002	100	75-125	0.1002	0.0998	100	0.4	20	-	-	< 0.000:
Lead - Total mg/l	0.1000	103	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.0183 < 0.002	0.4156 0.3938 0.3990	104 94 100	75-125 75-125 75-125	0.4156 0.3938 0.3990	0.4138 0.4062 0.4146	103 97 104	0.4 3.1 3.8	20 20 20	-		< 0.000
Lithium - Dissolved mg/l	0.40	105	80-120	1.00	17-W419	0.68	1.80	112	75-125	1.80	1.85	117	2.7	20	-	-	< 0.1 < 0.1 < 0.1
Lithium - Total mg/l	0.40	105	80-120	0.400	17-W423	< 0.1	0.46	115	75-125	0.46	0.46	115	0.0	20	-	-	< 0.1 < 0.1 < 0.1

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Quality Control Report

Lab IDs: 17-W419 to 17-W4	ett		Vork Or	der: 201													
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Magnesium - Dissolved mg/l	20.0	103	80-120	500	17-W487	269	800	106	75-125	800	775	101	3.2	20	-	-	< 1 < 1
Magnesium - Total mg/l	20.0 20.0 20.0	104 103 108	80-120 80-120 80-120	500 100 500 500 100	17-M312 17-M315 17-W420 17W424q 17-W429	< 5 1.0 1000 56.0 27.7	520 106 1520 555 128	104 105 104 100 100	75-125 75-125 75-125 75-125 75-125	1520 555 128	1540 570 128	108 103 100	1.3 2.7 0.0	20 20 20	- - -		<1 <1 <1
Mercury - Dissolved mg/l	0.0020	110	85-115	0.002 0.002	17-W491 17-W496	< 0.0002 < 0.0002	0.0020 0.0021	100 105	70-130 70-130	0.0020 0.0021	0.0020 0.0021	100 105	0.0	20 20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	105	85-115	0.002 0.002	17-W435 17-W447	< 0.0002 < 0.0002	0.0020 0.0019	100 95	70-130 70-130	0.0020 0.0019	0.0021 0.0020	105 100	4.9 5.1	20 20	-	-	< 0.0002
Molybdenum - Dissolved mg/l	0.0160	101	80-120	0.100	H26_500Q	< 0.002	0.1096	110	75-125	0.1096	0.1089	109	0.6	20	_	-	< 0.002
Molybdenum - Total mg/l	0.1000	94	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 0.2988 0.0042	0.4468 0.7380 0.4650	112 110 115	75-125 75-125 75-125	0.4468 0.7380 0.4650	0.4414 0.7566 0.4636	110 114 115	1.2 2.5 0.3	20 20 20	-	-	< 0.002
pH units	-	-	-	-	-	-	-	-	-	7.1 7.2	7.2 7.1	-	1.4 1.4	20 20	-	-	-
Potassium - Dissolved mg/l	10.0	92	80-120	100	17-W487	19.8	124	104	75-125	124	120	100	3.3	20	-	-	< 1 < 1
Potassium - Total mg/l	10.0 10.0 10.0	93 95 97	80-120 80-120 80-120	100 20.0 100 100 20.0	17-M312 17-M315 17-W420 17W424q 17-W429	14.8 9.3 34.6 10.1 3.4	116 29.8 140 108 23.0	101 102 105 98 98	75-125 75-125 75-125 75-125 75-125	140 108 23.0	144 111 23.0	109 101 98	2.8 2.7 0.0	20 20 20	- - - -	- - - -	<1 <1 <1
Selenium - Dissolved mg/l	0.0160	97	80-120	0.100	H26_500Q	0.0029	0.1188	116	75-125	0.1188	0.1248	122	4.9	20	-	-	< 0.002
Selenium - Total mg/l	0.1000	113	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.002 < 0.002 0.0082	0.4742 0.4396 0.5084	119 110 125	75-125 75-125 75-125	0.4742 0.4396 0.5084	0.4908 0.4872 0.5034	123 122 124	3.4 10.3 1.0	20 20 20	-	-	< 0.002

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Quality Control Report

Lab IDs: 17-W419 to 17-W423

Project: MDU Heskett Work Order: 201782-0402

	LCS	LCS	LCS	Matrix	Matrix	Matrix Spike	Matrix	Matrix Spike	Matrix Spike	MSD/	MSD/	MCD	More	MSD/			
Analyte	Spike Amt	Rec %	% Rec Limits	Spike Amt	Spike ID	Orig Result	Spike Result	Rec %	% Rec	Dup Orig Result	Dup Result	MSD Rec %	MSD/ Dup RPD	Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Sodium - Dissolved mg/l	20.0	100	80-120	500	17-W487	575	1100	105	75-125	1100	1060	97	3.7	20	-	-	<1 <1
Sodium - Total mg/l	20.0 20.0 20.0	99 102 105	80-120 80-120 80-120	500 100 500 500 100	17-M312 17-M315 17-W420 17W424q 17-W429	402 222 1030 950 7.7	925 309 1520 1360 111	105 87 98 82 103	75-125 75-125 75-125 75-125 75-125	1520 1360 111	1560 1400 109	106 90 101	2.6 2.9 1.8	20 20 20		- - - -	<1 <1 <1
Sulfate mg/l	100	90	80-120	100	17-W423	< 5	82.4	82	80-120	82.4	84.2	84	2.2	20	_	_	< 5
Thallium - Dissolved mg/l	0.0160	99	80-120	0.100	17W422q	< 0.0005	0.1013	101	75-125	0.1013	0.1012	101	0.1	20		_	< 0.0005
Thallium - Total mg/l	0.1000	103	80-120	0.400 0.400 0.400	17W423q 17W424q 17W430q	< 0.0005 < 0.0005 < 0.0005	0.3662	104 92 101	75-125 75-125 75-125	0.4152 0.3662 0.4036	0.4136 0.3810 0.4148	103 95 104	0.4 4.0 2.7	20 20 20	-	-	< 0.0005
Total Alkalinity mg/l CaCO3	410	92	90-110	410 410	17-W420 17-W423	440 < 20	803 379	89 92	80-120 80-120	803 379	810 375	90 91	0.9	20 20	91	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	_	-	_	2680	2740	_	2.2	20	_	_	< 10
Total Suspended Solids mg/l	-	-	-	-	-	_	_	-	-	18	21	-	15.4	20		-	< 2

Approved by: C. GWD

8 Mar 17



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

Project Name: MDU Heskett Sample Description: MW13

Event and Year: Feb 2017

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Report Date: 7 Mar 17 Lab Number: 17-W419 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 9:22 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Feb 17	SVS
рН	* 7.1	units	N/A	SM4500 H+ B	22 Feb 17 17:00	SVS
Total Suspended Solids	11	mg/l	2	I3765-85	21 Feb 17 17:12	SVS
pH - Field	6.86	units	NA	SM 4500 H+ B	21 Feb 17 9:22	JSM
Temperature - Field	7.14	Degrees C	NA	SM 2550B	21 Feb 17 9:22	JSM
Total Alkalinity	492	mg/l CaCO3	20	SM2320-B	22 Feb 17 17:00	SVS
Conductivity - Field	10348	umhos/cm	1	EPA 120.1	21 Feb 17 9:22	JSM
Fluoride	0.83	mg/l	0.10	SM4500-F-C	22 Feb 17 17:00	SVS
Sulfate	5700	mg/l	5.00	ASTM D516-07	24 Feb 17 16:16	EMS
Chloride	82.2	mg/l	1.0	SM4500-Cl-E	24 Feb 17 10:46	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 12:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	9630	mg/l	10	I1750-85	22 Feb 17 14:39	SVS
Calcium - Total	402	mg/l	1.0	6010	2 Mar 17 17:14	KMD
Magnesium - Total	615	mg/l	1.0	6010	2 Mar 17 17:14	KMD
Sodium - Total	1810	mg/l	1.0	6010	2 Mar 17 17:14	KMD
Potassium - Total	26.1	mg/l	1.0	6010	2 Mar 17 17:14	KMD
Lithium - Total	0.70	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Total	0.68	mg/l	0.10	6010	22 Feb 17 17:00	KMD
Calcium - Dissolved	377	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Magnesium - Dissolved	575	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Sodium - Dissolved	1740	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Potassium - Dissolved	24.0	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Lithium - Dissolved	0.68	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Dissolved	< 0.5 @	mg/l	0.10	6010	22 Feb 17 12:28	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Feb 17 9:50	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Barium - Total	0.0087	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Lead - Total	< 0.002 ^	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Selenium - Total	0.0453	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 10:10	KMD

RL = Method Reporting Limit

= Due to concentration of other analytes
+ = Due to internal standard response



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

Project Name: MDU Heskett Sample Description: MW13

Event and Year: Feb 2017

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Report Date: 7 Mar 17 Lab Number: 17-W419 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 9:22 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Barium - Dissolved	0.0059 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Selenium - Dissolved	0.0509 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Thallium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD

^{*} Holding time exceeded

Approved by:

Claudite K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

= Due to concentration of other analytes
+ = Due to internal standard response

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



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Amended 21Mar17-Sample Description

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

Project Name: MDU Heskett Sample Description: MW44R

Event and Year: Feb 2017

Report Date: 7 Mar 17 Lab Number: 17-W420 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 11:33 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

					187		
	As Receive	ed	Method	Method	Date		
	Result		RL	Reference	Analyzed	Analyst	
Metal Digestion				EPA 200.2	21 Feb 17	svs	
рН	* 6.9	units	N/A	SM4500 H+ B	22 Feb 17 17:	00 SVS	
Total Suspended Solids	36	mg/l	2	I3765-85	21 Feb 17 17:	12 SVS	
pH - Field	6.57	units	NA	SM 4500 H+ B	21 Feb 17 11:	33 JSM	
Temperature - Field	8.14	Degrees C	NA	SM 2550B	21 Feb 17 11:	33 JSM	
Total Alkalinity	440	mg/l CaCO3	20	SM2320-B	22 Feb 17 17:	00 SVS	
Conductivity - Field	9110	umhos/cm	1	EPA 120.1	21 Feb 17 11:	33 JSM	
Fluoride	0.68	mg/l	0.10	SM4500-F-C	22 Feb 17 17:	00 SVS	
Sulfate	5280	mg/l	5.00	ASTM D516-07	24 Feb 17 16:	16 EMS	
Chloride	241	mg/l	1.0	SM4500-Cl-E	24 Feb 17 10:	46 EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 12:	00 EV	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:	32 EV	
Total Dissolved Solids	9240	mg/l	10	I1750-85	22 Feb 17 14:	39 SVS	
Calcium - Total	428	mg/l	1.0	6010	2 Mar 17 17:	14 KMD	
Magnesium - Total	1000	mg/l	1.0	6010	2 Mar 17 17:		
Sodium - Total	1030	mg/l	1.0	6010	2 Mar 17 17:	14 KMD	
Potassium - Total	34.6	mg/l	1.0	6010	2 Mar 17 17:	14 KMD	
Lithium - Total	1.53	mg/l	0.10	6010	22 Feb 17 13:	12 KMD	
Boron - Total	0.42	mg/l	0.10	6010	22 Feb 17 17:	00 KMD	
Calcium - Dissolved	414	mg/l	1.0	6010	2 Mar 17 14:	14 KMD	
Magnesium - Dissolved	960	mg/l	1.0	6010	2 Mar 17 14:	14 KMD	
Sodium - Dissolved	990	mg/l	1.0	6010	2 Mar 17 14:	14 KMD	
Potassium - Dissolved	32.9	mg/l	1.0	6010	2 Mar 17 14:	14 KMD	
Lithium - Dissolved	1.49	mg/l	0.10	6010	22 Feb 17 13:	12 KMD	
Boron - Dissolved	0.39	mg/l	0.10	6010	22 Feb 17 12:	28 KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Feb 17 9:	50 KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:	50 KMD	
Barium - Total	0.0230	mg/l	0.0020	6020	28 Feb 17 9:	50 KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:	50 KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:	50 KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:	50 KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:	50 KMD	
Lead - Total	< 0.002 ^	mg/l	0.0005	6020	28 Feb 17 9:	50 KMD	
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:	50 KMD	
Selenium - Total	0.0860	mg/1	0.0020	6020	28 Feb 17 9:	50 KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:	50 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



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Amended 21Mar17-Sample Description

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

Project Name: MDU Heskett Sample Description: MW44R

Event and Year: Feb 2017

Report Date: 7 Mar 17 Lab Number: 17-W420 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 11:33 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	6 Mar 17 10:10	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Barium - Dissolved	0.0089 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Selenium - Dissolved	0.0982 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canto

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 con
! = Due to sample quantity + = Due to in

= Due to concentration of other analytes
+ = Due to internal standard response

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



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

Project Name: MDU Heskett Sample Description: MW103

Event and Year: Feb 2017

Page: 1 of 2

Report Date: 7 Mar 17 Lab Number: 17-W421 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 13:16 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Feb 17	SVS
рН	* 7.0	units	N/A	SM4500 H+ B	22 Feb 17 17:00	SVS
Total Suspended Solids	3	mg/l	2	I3765-85	21 Feb 17 17:12	SVS
pH - Field	6.74	units	NA	SM 4500 H+ B	21 Feb 17 13:16	JSM
Temperature - Field	8.11	Degrees C	NA	SM 2550B	21 Feb 17 13:16	JSM
Total Alkalinity	435	mg/l CaCO3	20	SM2320-B	22 Feb 17 17:00	SVS
Conductivity - Field	5067	umhos/cm	1	EPA 120.1	21 Feb 17 13:16	JSM
Fluoride	0.14	mg/l	0.10	SM4500-F-C	22 Feb 17 17:00	SVS
Sulfate	2340	mg/l	5.00	ASTM D516-07	24 Feb 17 16:16	EMS
Chloride	153	mg/l	1.0	SM4500-Cl-E	24 Feb 17 10:46	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 12:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	4890	mg/l	10	I1750-85	22 Feb 17 14:39	SVS
Calcium - Total	535	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Magnesium - Total	455	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Sodium - Total	278	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Potassium - Total	20.9	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Lithium - Total	0.68	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	22 Feb 17 17:00	KMD
Calcium - Dissolved	540	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Magnesium - Dissolved	461	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Sodium - Dissolved	279	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Potassium - Dissolved	20.9	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Lithium - Dissolved	0.63	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Dissolved	< 0.2 @	mg/l	0.10	6010	22 Feb 17 12:28	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Feb 17 9:50	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Barium - Total	0.0076	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Lead - Total	< 0.002 ^	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Selenium - Total	0.2532	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 10:10	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 con! = Due to sample quantity = Due to int

= Due to concentration of other analytes
+ = Due to internal standard response



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2 of 2 Page:

Report Date: 7 Mar 17 Lab Number: 17-W421 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 13:16 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: MW103

Event and Year: Feb 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg	g/l	0.0020	6020	6 Mar 17 10:10	KMD
Barium - Dissolved	0.0064 mg	g/l	0.0020	6020	6 Mar 17 10:10	KMD
Beryllium - Dissolved	< 0.0005 mg	g/1	0.0005	6020	6 Mar 17 10:10	KMD
Cadmium - Dissolved	< 0.0005 mg	g/l	0.0005	6020	6 Mar 17 10:10	KMD
Chromium - Dissolved	< 0.002 mg	g/l	0.0020	6020	6 Mar 17 10:10	KMD
Cobalt - Dissolved	< 0.002 mg	g/l	0.0020	6020	6 Mar 17 10:10	KMD
Lead - Dissolved	< 0.0005 mg	g/l	0.0005	6020	6 Mar 17 10:10	KMD
Molybdenum - Dissolved	< 0.002 mg	g/l	0.0020	6020	6 Mar 17 10:10	KMD
Selenium - Dissolved		g/1	0.0020	6020	6 Mar 17 10:10	KMD
Thallium - Dissolved	_	g/l	0.0005	6020	6 Mar 17 10:10	KMD

^{*} Holding time exceeded

Approved by: Clauditte K. Cantlo

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

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



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

Project Name: MDU Heskett Sample Description: MW2-90

Event and Year: Feb 2017

1 of 2 Page:

Report Date: 7 Mar 17 Lab Number: 17-W422 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 14:47 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Receive	ed	Method RL	Method Reference	Date Analyzed Analyst	
	Result		КГ	Reference	Analyzed Analyse	
Metal Digestion				EPA 200.2	21 Feb 17 SVS	
pH	* 7.2	units	N/A	SM4500 H+ B	22 Feb 17 17:00 SVS	
Total Suspended Solids	9	mg/l	2	I3765-85	21 Feb 17 17:12 SVS	
pH - Field	6.93	units	NA	SM 4500 H+ B	21 Feb 17 14:47 JSM	
Temperature - Field	8.01	Degrees C	NA	SM 2550B	21 Feb 17 14:47 JSM	
Total Alkalinity	476	mg/l CaCO3	20	SM2320-B	22 Feb 17 17:00 SVS	
Conductivity - Field	7022	umhos/cm	1	EPA 120.1	21 Feb 17 14:47 JSM	
Fluoride	1.00	mg/l	0.10	SM4500-F-C	22 Feb 17 17:00 SVS	
Sulfate	3940	mg/l	5.00	ASTM D516-07	24 Feb 17 16:16 EMS	
Chloride	81.2	mg/l	1.0	SM4500-Cl-E	24 Feb 17 10:46 EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 12:00 EV	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32 EV	
Total Dissolved Solids	6800	mg/l	10	I1750-85	22 Feb 17 14:39 SVS	
Calcium - Total	456	mg/l	1.0	6010	2 Mar 17 18:14 KMD	
Magnesium - Total	660	mg/l	1.0	6010	2 Mar 17 18:14 KMD	
Sodium - Total	730	mg/l	1.0	6010	2 Mar 17 18:14 KMD	
Potassium - Total	25.1	mg/l	1.0	6010	2 Mar 17 18:14 KMD	
Lithium - Total	1.23	mg/l	0.10	6010	22 Feb 17 13:12 KMD	
Boron - Total	0.36	mg/l	0.10	6010	22 Feb 17 17:00 KMD	
Calcium - Dissolved	444	mg/l	1.0	6010	2 Mar 17 14:14 KMD	
Magnesium - Dissolved	635	mg/l	1.0	6010	2 Mar 17 14:14 KMD	
Sodium - Dissolved	705	mg/l	1.0	6010	2 Mar 17 14:14 KMD	
Potassium - Dissolved	24.0	mg/l	1.0	6010	2 Mar 17 14:14 KMD	
Lithium - Dissolved	1.04	mg/l	0.10	6010	22 Feb 17 13:12 KMD	
Boron - Dissolved	0.32	mg/l	0.10	6010	22 Feb 17 12:28 KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Feb 17 9:50 KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Barium - Total	0.0096	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50 KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50 KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Lead - Total	< 0.002 ^	mq/l	0.0005	6020	28 Feb 17 9:50 KMD	
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Selenium - Total	0.1285	mg/l	0.0020	6020	28 Feb 17 9:50 KMD	
Thallium - Total	< 0.0005	mg/1	0.0005	6020	28 Feb 17 9:50 KMD	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 10:10 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



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



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Report Date: 7 Mar 17 Lab Number: 17-W422 Work Order #:82-0402 Account #: 002800

Date Sampled: 21 Feb 17 14:47 Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: MW2-90

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Barium - Dissolved	0.0085 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD
Molybdenum - Dissolved	< 0.004 @ mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Selenium - Dissolved	0.1300 mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canto

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

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



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

Project Name: MDU Heskett Sample Description: FB1

Event and Year: Feb 2017

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Report Date: 7 Mar 17 Lab Number: 17-W423 Work Order #:82-0402 Account #: 002800 Date Sampled: 21 Feb 17

Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			le .	EPA 200.2	21 Feb 17	SVS
На	* 5.8	units	N/A	SM4500 H+ B	22 Feb 17 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	21 Feb 17 17:12	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	22 Feb 17 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Feb 17 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	24 Feb 17 16:16	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	24 Feb 17 10:46	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 12:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	22 Feb 17 14:39	SVS
Calcium - Total	< 1	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Magnesium - Total	< 1	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Sodium - Total	< 1	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Potassium - Total	< 1	mg/l	1.0	6010	2 Mar 17 18:14	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	22 Feb 17 17:00	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Potassium - Dissolved	< 1	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	22 Feb 17 13:12	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	22 Feb 17 12:28	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Feb 17 9:50	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Lead - Total	< 0.002 ^	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	28 Feb 17 9:50	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	28 Feb 17 9:50	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 10:10	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 10:10	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



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Page:

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Report Date: 7 Mar 17

Lab Number: 17-W423 Work Order #:82-0402

Account #: 002800 Date Sampled: 21 Feb 17

Date Received: 21 Feb 17 16:21 Sampled By: MVTL Field Services

Temp at Receipt: 8.0C ROI

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

Project Name: MDU Heskett Sample Description: FB1

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 10:10	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 10:10	KMD
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	6 Mar 17 10:10	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 10:10	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canto

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

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



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	MW13
Sampling Personal:	Jeren plane

Phone: (701) 258-9	720						-	oumpling i	o.coman.		to lange		
Weather Conditions:		Temp:	35	°F	Wind:	535-10	D		Precip:	Suni	ny / Partly (Cloudy /Cl	oudy)
1	Well Info	rmation						Sa	mpling I	nformatio			
Well Locked?	Yes	Øĵ>				Purgin	g Method:	Blac	lder		Co	ontrol Settin	gs
Well Labeled?	∕/es	No				Sampling	g Method:	Blac	lder		Purge:	6	sec.
Casing Straight?	Yes	No				Dedicate	ed Equip?:	(Yes)	No]	Recover:	54	sec.
Grout Seal Intact?	(Yes	No	Not	Visible		Duplicate S	Sample?:	<u>-₹6</u> 9-	(No)		PSI:	30	
Repairs Necessary:						Duplicate S	ample ID:	Dort	-i- 21 feb	7	Pumping R	Rate: /00	mL/min
Casing	Diameter:		2''							• *			
Water Level Befo	ore Purge:	<u> </u>	7.02	ft		Pu	urge Date:	21 Feb	17	Time Purg	ing Began:	0857	<a3m pm<="" td=""></a3m>
Total W	ell Depth:	·		ft		Well Pu	rged Dry?	Yes	No	Time F	urged Dry:		am/pm
We	ll Volume:			liters		Sam	nple Date:	21 feb/7	<u>ا</u>	Time of	f Sampling:	2290	(ām/pm
Depth to Top	of Pump:	<		ft									
Water Level Afte	r Sample:		170	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL	Nitric (filtere	ed), 4-1L Ni	tric
Measurement	t Method:	Electric V	Vater Lev	el Indicator		List:							

Field Measurements

	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0902	6.85	10322	6.85	4.19	257.9	3,19	30.45	500	Clear
2	0907	6.78	10350	6.85	3,57	254.8	1.56	30,40	500	Clear
3	0912	6.78	10352	6.86	3,60	252,8	0.98	30,48	500	Clea
4	0917	6,94	10357	6.86	3,66	251.1	0.80	30,51	500	Clear
5	0922	7.14	10348	6,86	3,81	251,2	0.71	30.48	SOO	Clear
6							1			
7										
8										
9										
10 Stabilized:	(Ve)									

Stabilized: Yes No Total Volume Removed: 2500 mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	HWYYR
Sampling Personal:	Jewenn Men-

2616 E. Broadway Ave, Bismarck, ND

	•						Camping	Crooria.	10000	10 10 1070		
Phone: (701) 258-9	9720											
Weather Conditions:		Temp:	40 °F		Wind:	50570		Precip:	Sunr	ny Partly C	loudy / Clo	oudy
	Well Info	rmation	•				Sa	ampling Ir	nformatio	on		
Well Locked?	Yes	NO				Purging Method	: Blac	dder		Co	ntrol Setting	gs
Well Labeled?	(es	No				Sampling Method	: Blac	dder		Purge:	7	sec.
Casing Straight?	Ve s	No				Dedicated Equip?	: (Pes)	No		Recover:	<u>53</u>	sec.
Grout Seal Intact?	(es)	No	Not Visil	ole		Duplicate Sample?:	Yes	No		PSI:	30	
Repairs Necessary:						Duplicate Sample ID	:			Pumping R	ate: /00	mL/min
Casing	Diameter:		2"									
Water Level Bef	ore Purge:		17,22	ft		Purge Date	: 21 4417		Time Purg	ing Began:	1058	⟨a͡m∕pm
Total V	Vell Depth:	•		ft		Well Purged Dry	? Yes	(6M)	Time P	urged Dry:		am/pm
We	ell Volume:	•		liters		Sample Date	: 21 feb/7		Time of	Sampling:	1133	@m/pm
Depth to To	p of Pump:	4		ft								
Water Level After	er Sample:	2	7.28	ft		Bottle C	CR: 1L Raw	, 500mL Nitii	rc, 500mL	Nitric (filtere	ed), 4-1L Nit	ric
Measuremer	nt Method:	Electric \	Water Level Ind	icator		List:						

Field Measurements

(3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ#	Time				±10%	±20 mv		0.25 11		
1	1103	7.97	9144	658	5,15	237.3	23,2	27.27	500	Clear
2	1108	7,93	9119	6,57	4.57	239,5	33,8	27,27	500	Clear
3	1113	7.92	9119	6,57	4.65	239,4	18.6	27.27	500	Clea
4	1118	7.83	9113	6.56	4.44	239,8	12.1	27,27	500	Cles
5	1123	7.93	9116	6,56	4,52	239,3		27.28	500	Clear
6	1128	8,29	9112	6,57	4.60	238,2	12.3	27.28	500	Clear
7	1133	B,14	9110	6,57	4,53	2383	11.9	27,28	500	Clear
8										
9										
10										
Stabilized:	(Yes	No				To	otal Volume	Removed:	3 50	mL.

Stabilized: (Yes Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	103
Sampling Personal:	Jerey Men

Phone: (701) 258-9	720						_	Sampling Fe	ersoriai.	Jer	7 run		
` .	720		140									·	
Weather Conditions:	··.	Temp:	40	°F	Wind:	2 @ < ~	10		Precip:	Sunr	ny / Partly C	loudy/Clo	udy >
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(No)				Purgir	ng Method:	Blade	der		Cc	ntrol Setting	s
Well Labeled?	Yes>	No				Samplin	ng Method:	Blade	der		Purge:	4	sec.
Casing Straight?	(es)	No				Dedicat	ed Equip?:	(es)	No		Recover:	56	sec.
Grout Seal Intact?	(Yes)	No	Not '	Visible		Duplicate	Sample?:	Yes	No		PSI:	30	
Repairs Necessary:						Duplicate :	Sample ID:	ــــــ			Pumping R	ate: / pン	mL/min
Casing	Diameter:		2''										
Water Level Befo	ore Purge:	32	75	ft		P	urge Date:	21 feb 17	-	Time Purg	ing Began:	1231	am/pm
Total W	/ell Depth:			ft		Well P	urged Dry?	Yes	(O)	Time P	Purged Dry:		am/pm
We	ll Volume:			liters		Sa	mple Date:	2146/7	7	Time of	f Sampling:	1316	am/pm
Depth to Top	of Pump:			ft									
Water Level Afte	er Sample:	3	6,63	ft		Bottle	CC	R: 1L Raw,	500mL Niti	rc, 500mL	Nitric (filtere	d), 4-1L Nitri	ic
Measuremen	t Method:	Electric V	Vater Leve	I Indicator		List:							
				Field	Measure	ments							

	zation ecutive)	Temp (°C)	Spec. Cond.	pH.	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1236	8.1B	5049	6,74	5.44	239,4	0,77	33.05	500	Clear
2	1241	8,03	5060	6.75	5.71	243,3	0.31	33,30	500	Clear
3	1246	8,02	5064	6.74	5.70	245,5	0,23	33,67	500	Clear
4	1251	8,01	5059	6,74	5.66	246.9	0,27	34,00	500	Clea
5	1256	B. U	5067	6,75	5.95	247,2	0.51	34,30	500	Clear
6	1301	8.14	5066	6,75	5,77	235,4	0,64	34,52	కోలు	clier
7	1306	8,13	5069	6.74	5,78	218.1	0,76	34,68	500	ilear
8	1311	8,15	2066	6,75	5,69	203,7	0.80	34,70	500	Clear
9	1316	8:11	5067	6,74	5,73	200.1	0,72	34.80	500	Clear
10										
Stabilized:	Yes	No	•			To	otal Volume	Removed:	4500	mL

Comments:



Comments:

Field Datasheet

Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	2-90	
Sampling Personal:	Jerenaliner	

Phone: (701) 258-9720

` '							_						
Weather Conditions:		Temp:	40°F		Wind:	503-10			Precip:	Sunr	ny / Partly C	loudy / Clo	udy
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(ŊG				Purging Meth	od:	Blad	der		Со	ntrol Setting	s
Well Labeled?	Yes	No				Sampling Meth	od:	Blad	der		Purge:	5	sec.
Casing Straight?	(Ŷe)s	No				Dedicated Equi	p?:	(Pes)	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not-Vis	ible		Duplicate Sample	?:	Yes	(No.		PSI:	Zo	
Repairs Necessary:				- Albania		Duplicate Sample	ID:				Pumping R	ate: 160	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	2	D(0)	ft		Purge Da	ate:	Zi feb/	ユ	Time Purg	ing Began:	1427	am/pm
Total V	Vell Depth:			ft		Well Purged D		Yes	(No)	Time P	urged Dry:		am/pm
We	ell Volume:	•	4	liters		Sample Da	ate:	Zifel 1	7	Time of	Sampling:	1447	am/pm
Depth to Top	o of Pump:	100		ft				-					
Water Level After	er Sample:	20	9,45	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL	Nitric (filtere	d), 4-1L Nitr	ic
Measuremer	nt Method:	Electric V	Water Level In	dicator		List:							

Field Measurements

Stabili (3 cons	ization ecutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1432	8.16	7041	6,94	4,47	224.7	0.62	20,49	500	Clear
2	1437	7.97	7026	6.94	3,66	228.5	0,22	20,39	500	clear
3	1442	7.98	7019	6,94	3,54	Z30.2	0,27	20,39	500	Cles
4	1447	8,01	7022	6,93	3,53	231.4		20.45	500	Clear
5	•					e. I				
6							:			
7										
. 8										
9										
10 Stabilized:	(Yes)	No			1	Į	 otal Volume	Removed:	2 ma)	mL

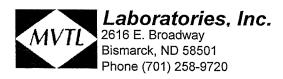


2616 E. Broadway Ave, Bismarck, ND

Water Level

Phone: (701) 258-9720

Sampling Pe	ersonnel: Jery My			Company: MDU Heskett 2017
Well ID MW1-90	Date 21 ful 7	Time	Depth to Water	Comments



Chain of Custody Record

Project Nam	ie:	Event:	Work Order Number: 82-0403
	MDU Heskett	Feb 2017	82-0400
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501	Carbon Copy: Attn: Address:	Name of Sampler(s):
phone: email:	701-222-7829		

		Sampl	e Informatio	n			Во	ttle Typ	е	Fi	eld Para	meters	Analysis
	Lab Number	Sample ID	Date	Time	Sample Type	11100	500mL Nitric	odomi, Nitric (filtered)		⁷ emp (°C)	Spec. Cond.	Ha	Analysis Required
	J419	n MW13	21 fc6 13	୦୩୧೭	GW	Х	x >			7.14	16348	6.86	
		\$ MW44 R	21 fc\$17	1133	GW	\succ	14)	1		8.14	9118	6.57	
V	<u>04a)</u>		21 feb 17	1316	Gw	X	12/>			8.11	5067	6.74	
	N 499	MW Z-90	21 feb 17	1447	GW	×	X ?			8.01	7022	6.93	
	w423	FBI	21 feel 7		W	`×	x x	-			D		MDU CCR List with TSS
													and Dissolved CCR Metals.

Comments:

Relinquished By:		Sam	ple Condition:
Name/)	Date/Time	Location:	Temp (°C)
10 John	21 feb 17 1617	walk In #2	8,0 Ro 1 TM562 /(TM588)
2			

Received	l by:
/\ Name:	Date/Time
I Inal Stands	21FEB17
CU ULI SIMIONOSON	<u>llaal</u>
00	



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CASE NARRATIVE - AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG:

201782-0447

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W487 through 17-W496

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
MW101	17-W487
MW102	17-W488
MW105	17-W489
MW70	17-W490
MW80R	17-W491
MW3-90	17-W492
MW33	17-W493
Dup1	17-W494
Dup2	17-W495
FB2	17-W496
MW104	Not sampled – under snow cover

I. RECEIPT

- All samples were received at the laboratory on 24 Feb17 at 1050.
- 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.
 - o Temperature of samples upon receipt was 2.4°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.



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CASE NARRATIVE - AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG:

201782-0447

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W487 through 17-W496

Page 2 of 2

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).

All laboratory data has been approved by MVTI Laboratories

Recovery for one selenium 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.

Recovery for one lithium dissolved 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.

REPORTING ٧.

- 3 Apr 2017 Per email from Terri Olson at Barr, the case narrative and QC report were both amended. The case narrative was amended to include a qualifier for the out of range dissolved lithium matrix spike duplicate recovery. The QC report was amended to include the source identification for one beryllium dissolved matrix spike/matrix spike duplicate. In addition, a qualifier was added for one TSS duplicate where the absolute difference between the two duplicates was \pm 3 mg/l.
- 24 Apr 2017 Per email from Terri Olson at Barr, sample 17-W493 was amended to change the sample date to 24 Feb 2017.
- 4 May 2017 Per email from Terri Olson at Barr, the case narrative and QC report were both amended. The QC report was amended to include the source identification for one beryllium dissolved matrix spike/matrix spike duplicate.
- On 6 Jul 17, it was discovered that the template used to create the case narrative had an extra 7 in the work order (e.g. 2017782-0447). Case narrative has been corrected to reflect the correct work order.

Alliaborato	Ty data has been approved by MV 12 Laborator	ics.		
SIGNED:	Claudette and	DATE:	TJULIT	
Clau	udette Carroll - MVTL Bismarck Laboratory Ma	nager		

Ciaudette Carroll

From:

Terri A. Olson <TOlson@barr.com>

Sent:

Thursday, March 23, 2017 9:47 AM

To:

Claudette Carroll

Subject:

RE: Emailing - 201782-0447 MDU HESK CCR FEB 17.pdf

Follow Up Flag:

Follow up

Flag Status:

Flagged

Hi Claudette,

Reviewed this report and had the following items for your review:

- 1. Beryllium dissolved has 1 MS and 2 MSD results. The other ICPMS dissolved metals have at least 2 MS. It looks like it could be missing 17-W496 (FB2).
- 2. Lithium dissolved had an MSD % recovery at 130% but there wasn't a narrative included.
- 3. TSS RPD for the 2nd lab duplicate was above RPD limit but there wasn't a narrative included. Source IDs aren't listed in the QC data but based on an original result of 15 mg/L, it could be MW105. Please let us know the source. There was still holding time left so also wondering why it wasn't reanalyzed.

Thank-you,

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



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Tuesday, March 21, 2017 4:19 PM

To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Mary Hames <mhames@mvtl.com>; Steve Bowen <sbowen@mvtl.com>; Terri A. Olson <TOlson@barr.com>; Tonia D. O'Brien <tobrien@barr.com>; Julie Crispin <jcrispin@mvtl.com> **Subject:** Emailing - 201782-0447 MDU HESK CCR FEB 17.pdf

Hello again,

Attached is a data package for the CCR sampling done at MDU Heskett in Feb 2017. Hard copies to follow to Sam and EDDs will follow from our IT department.

Claudette

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Page: 1 of 5

Quality Control Report – Amended 7 Jul 17
Lab IDs: 17-W487 to 17-W496
Project: MDU Hesk

Lab IDs: 17-W487 to 17-W496 Project: MDU Heskett CCR Work Order: 201782-0447

Lab IDs: 17-W487 to 17-W	496	Project: MDU Heskett CCR					Nork Or	der: 201	782-0447	/					···	2001 #86222568867#14244.	
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	109	80-120	0.100 0.100	17W496q 17W554q	< 0.001 < 0.001	0.1146 0.0978	115 98	75-125 75-125	0.1146 0.0978	0.1121 0.1093	112 109	2.2 11.1	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000 0.1000	106 105	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.001 < 0.001 < 0.001	0.4380 0.4142 0.4210	110 104 105	75-125 75-125 75-125	0.4380 0.4142 0.4210	0.4502 0.4166 0.4290	113 104 107	2.7 0.6 1.9	20 20 20	-	-	< 0.001 < 0.001
Arsenic - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	17W496q 17W554q	< 0.002 < 0.002	0.1092 0.0977	109 98	75-125 75-125	0.1092 0.0977	0.1086 0.1076	109 108	0.6 9.6	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000 0.1000	107 99	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.002 < 0.002 < 0.002	0.4472 0.4162 0.4246	112 104 106	75-125 75-125 75-125	0.4472 0.4162 0.4246	0.4684 0.4238 0.4416	117 106 110	4.6 1.8 3.9	20 20 20	-	-	< 0.002 < 0.002
Barium - Dissolved mg/l	0.1000 0.1000	104 98	80-120 80-120	0.100 0.100	17W496q 17W554q	< 0.002 0.0309	0.1099 0.1243	110 93	75-125 75-125	0.1099 0.1243	0.1106 0.1290	111 98	0.6 3.7	20 20	-	-	< 0.002 < 0.002
Barium - Total mg/l	0.1000 0.1000 0.1000	100 97 98	80-120 80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	0.0098 0.0395 0.0289	0.4254 0.4274 0.4376	104 97 102	75-125 75-125 75-125	0.4254 0.4274 0.4376	0.4402 0.4360 0.4456	108 99 104	3.4 2.0 1.8	20 20 20	-	-	< 0.002 < 0.002 < 0.002
Beryllium - Dissolved mg/l	0.1000	114	80-120	0.100 0.100	17W496q 17W554q	< 0.0005 < 0.0005	0.1182 0.0938	118 94	75-125 75-125	0.1182 0.0938	0.1179 0.1020	118 102	0.3 8.4	20 20	-	-	< 0.0003
Beryllium - Total mg/l	0.1000 0.1000	100 96	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.0005 < 0.0005 < 0.0005	0.4158	109 104 105	75-125 75-125 75-125	0.4344 0.4158 0.4184	0.4588 0.4096 0.4346	115 102 109	5.5 1.5 3.8	20 20 20	-	-	< 0.0003 < 0.0003
Boron - Dissolved mg/l	0.40 0.40 0.40	102 105 108	80-120 80-120 80-120	0.400	17-W496	< 0.1	0.40	100	75-125	0.40	0.41	102	2.5	20	-	- - -	< 0.1
Boron - Total mg/l	0.40	110	80-120	0.400 0.400 0.400	17-W464 17-W490 17-W496	0.71 0.40 < 0.1	1.09 0.77 0.39	95 92 98	75-125 75-125 75-125	1.09 0.77 0.39	1.13 0.80 0.40	105 100 100	3.6 3.8 2.5	20 20 20	-	-	< 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	109	80-120	0.100 0.100	17W496q 17W554q	< 0.0005 < 0.0005		115 92	75-125 75-125	0.1149 0.0920	0.1126 0.1038	113 104	2.0 12.1	20 20	-	-	< 0.000:

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Quality Control Report

Lab IDs: 17-W487 to 17-W4	196	Pr	oject: MI	DU Hesk	ett CCR	7	Work Or	der: 201	782-044	7							
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 0.1000	106 108	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.0005 < 0.0005 0.0006	0.4350 0.4218 0.4182	109 105 104	75-125 75-125 75-125	0.4350 0.4218 0.4182	0.4464 0.4126 0.4386	112 103 110	2.6 2.2 4.8	20 20 20	-	-	< 0.0005 < 0.0005
Calcium - Dissolved mg/l	20.0 20.0	102 105	80-120 80-120	500 500	17-W487 17-W491	344 273	865 755	104 96	75-125 75-125	865 755	840 675	99 80	2.9 11.2	20 20	- - -	- - -	<1 <1 <1 <1
Calcium - Total mg/l	20.0 20.0	104 107	80-120 80-120	500 100	17-W487 17-W554	358 156	870 253	102 97	75-125 75-125	870 253	870 254	102 98	0.0 0.4	20 20	- - -	-	<1 <1 <1 <1
Chloride mg/l	30.0 30.0	89 89	80-120 80-120	30.0	17-W554	7.0	33.8	89	80-120	33.8	32.4	85	4.2	20	-	-	< 1 < 1
Chromium - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	17W496q 17W554q	< 0.002 < 0.002	0.1020 0.0865	102 86	75-125 75-125	0.1020 0.0865	0.1000 0.0932	100 93	2.0 7.5	20 20	-	-	< 0.002
Chromium - Total mg/l	0.1000 0.1000	98 93	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.002 < 0.002 0.0041	0.3888 0.3700 0.3876	97 92 96	75-125 75-125 75-125	0.3888 0.3700 0.3876	0.4060 0.3760 0.3934	102 94 97	4.3 1.6 1.5	20 20 20	-	-	< 0.002 < 0.002
Cobalt - Dissolved mg/l	0.1000	98	80-120	0.100 0.100	17W496q 17W554q	< 0.002 < 0.002	0.1026 0.0854	103 85	75-125 75-125	0.1026 0.0854	0.1009 0.0917	101 92	1.7 7.1	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000 0.1000	99 93	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.002 < 0.002 0.0055	0.3926 0.3748 0.3894	98 94 96	75-125 75-125 75-125	0.3926 0.3748 0.3894	0.4086 0.3786 0.3976	102 95 98	4.0 1.0 2.1	20 20 20	- -		< 0.002 < 0.002
Fluoride mg/l	0.50	104	90-110	0.500 0.500	17-W491 17-W492	0.32 0.14	0.79 0.66	94 104	80-120 80-120	0.79 0.66	0.79 0.64	94 100	0.0	20 20		-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	17W496q 17W554q	< 0.0005 < 0.0005	0.1128 0.0845	113 84	75-125 75-125	0.1128 0.0845	0.1125 0.0938	112 94	0.3 10.4	20 20	-	-	< 0.0005

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Quality Control Report Lab IDs: 17-W487 to 17-W496

Project: MDIJ Heskett CCR

Work Order: 201782-0447

Lab IDS: 1/-W48/ to 1/-W4	90	Pr	oject: MI	JU Heske	en CCR	Matrix	work Or	Matrix	782-044′ Matrix	MSD/		1		MSD/			
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Spike Orig Result	Matrix Spike Result	Spike Rec %	Spike % Rec Limits	Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Lead - Total mg/l	0.1000 0.1000	102 97	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.0005 < 0.0005 0.0011	0.3904 0.3660 0.3640	98 92 91	75-125 75-125 75-125	0.3904 0.3660 0.3640	0.4018 0.3626 0.3734	100 91 93	2.9 0.9 2.5	20 20 20	-	-	< 0.0005 < 0.0005
Lithium - Dissolved mg/l	0.40	102	80-120	0.200	17-W487	0.62	0.85	115	75-125	0.85	0.88	130	3.5	20	-	-	< 0.1 < 0.1
Lithium - Total mg/l	0.40 0.40	108 105	80-120 80-120	0.400 0.400	17-W464 17-W490	0.03 0.31	0.50 0.78	118 118	75-125 75-125	0.50 0.78	0.50 0.78	118 118	0.0	20 20	-	- - -	< 0.1 < 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0 20.0	103 107	80-120 80-120	500 500	17-W487 17-W491	269 535	800 1020	106 97	75-125 75-125	800 1020	775 920	101 77	3.2 10.3	20 20			<1 <1 <1 <1
Magnesium - Total mg/l	20.0 20.0	106 108	80-120 80-120	500 100	17-W487 17-W554	278 93.1	800 196	104 103	75-125 75-125	800 196	795 198	103 105	0.6	20 20	-	-	<1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020	110	85-115	0.002 0.002	17-W491 17-W496	< 0.0002 < 0.0002		100 105	70-130 70-130	0.0020 0.0021	0.0020 0.0021	100 105	0.0	20 20	-	-	< 0.0002
Mercury - Total mg/l	0.0020 0.0020	110 105	85-115 85-115	0.002 0.002 0.002	17-W489 17-W554 17-W558	< 0.0002 < 0.0002 < 0.0002	0.0020	100 100 90	70-130 70-130 70-130	0.0020 0.0020 0.0018	0.0020 0.0020 0.0019	100 100 95	0.0 0.0 5.4	20 20 20	-	-	< 0.0002 < 0.0002
Molybdenum - Dissolved mg/l	0.1000 0.1000	109 95	80-120 80-120	0.200 0.100 0.100	17-W422Q 17W496q 17W554q	< 0.004 < 0.002 < 0.002	0.2051 0.1158 0.0936	103 116 94	75-125 75-125 75-125	0.2051 0.1158 0.0936	0.2118 0.1134 0.1054	106 113 105	3.2 2.1 11.9	20 20 20	-	-	< 0.002 < 0.002

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Quality Control Report

Lab IDs: 17-W487 to 17-W4	196	Pr	oject: MI	DU Hesk	ett CCR		Work Or	7	782-044								
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Molybdenum - Total mg/l	0.1000 0.1000 0.1000	87 92 95	80-120 80-120 80-120	0.400 0.400 0.400 0.400	17W554q 17W573q 17-W490 17-W573	< 0.002 0.0034 0.0025 0.0030	0.4142 0.4362 0.3818 0.3966	104 108 95 98	75-125 75-125 75-125 75-125	0.4142 0.4362 0.3818 0.3966	0.4228 0.4504 0.3892 0.4024	106 112 97 100	2.1 3.2 1.9 1.5	20 20 20 20 20	- - -	-	< 0.002 < 0.002
pH units	-	-	-	-	-	-	-	-	-	6.9 7.2	7.0 7.2	-	1.4 0.0	20 20	_	-	-
Potassium - Dissolved mg/l	10.0	92 98	80-120 80-120	100 100	17-W487 17-W491	19.8 < 5	124 103	104 103	75-125 75-125	124 103	120 92.0	100 92	3.3	20 20		- - -	< 1 < 1 < 1 < 1
Potassium - Total mg/l	10.0 10.0	96 98	80-120 80-120	100 20.0	17-W487 17-W554	20.0 11.0	124 32.8	104 109	75-125 75-125	124 32.8	124 33.3	104 112	0.0	20 20	-	1 1 1	< 1 < 1 < 1 < 1
Selenium - Dissolved mg/l	0.1000 0.1000	118 108	80-120 80-120	0.200 0.100 0.100	17-W422Q 17W496q 17W554q	0.1300 < 0.005 < 0	0.3706 0.1239 0.1090	120 124 109	75-125 75-125 75-125	0.3706 0.1239 0.1090	0.3659 0.1170 0.1173	118 117 117	1.3 5.7 7.3	20 20 20	-	-	< 0.002 < 0.002
Selenium - Total mg/l	0.1000 0.1000 0.1000	115 105 108	80-120 80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	0.0061 < 0.002 0.0641	0.4606 0.4600 0.5422	114 115 120	75-125 75-125 75-125	0.4606 0.4600 0.5422	0.4784 0.4536 0.5662	118 113 126	3.8 1.4 4.3	20 20 20	-	-	< 0.002 < 0.002 < 0.002
Sodium - Dissolved mg/l	20.0 20.0	100 104	80-120 80-120	500 500	17-W487 17-W491	575 575	1100 1060	105 97	75-125 75-125	1100 1060	1060 955	97 76	3.7 10.4	20 20	-	-	<1 <1 <1 <1
Sodium - Total mg/l	20.0 20.0	103 105	80-120 80-120	500 100	17-W487 17-W554	610 393	1110 470	100 77	75-125 75-125	1110 470	1110 474	100 81	0.0	20 20	- - -	- - -	< 1 < 1 < 1 < 1

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Quality Control Report

Lab IDs: 17-W487 to 17-W496

Project: MDII Heskett CCR

Work Order: 201782-0447

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
Sulfate mg/l	100 100 100 100	92 91 105 99	80-120 80-120 80-120 80-120	100 100 1000	17-W449 17-W496 17-D736	< 5 < 5 984	81.4 92.4 1880	81 92 90	80-120 80-120 80-120	81.4 92.4 1880	83.9 104 1890	84 104 91	3.0 11.8 0.5	20 20 20 20	-	- - - -	< 5 < 5 < 5 < 5 < 5
Thallium - Dissolved mg/l	0.1000	105	80-120	0.100 0.100	17W496q 17W554q	< 0.0005 < 0.0005		113 86	75-125 75-125	0.1132 0.0856	0.1117 0.0940	112 94	1.3 9.4	20 20	-	-	< 0.000
Thallium - Total mg/l	0.1000 0.1000	102 97	80-120 80-120	0.400 0.400 0.400	17W490q 17W554q 17W573q	< 0.0005 < 0.0005 < 0.0005	0.3750	99 94 93	75-125 75-125 75-125	0.3950 0.3750 0.3708	0.4108 0.3752 0.3808	103 94 95	3.9 0.1 2.7	20 20 20	-	-	< 0.000 < 0.000
Total Alkalinity mg/l CaCO3	410	91	90-110	410 410	17-W490 17-W493	391 460	752 819	88 88	80-120 80-120	752 819	753 814	88 86	0.1 0.6	20 20	92	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	_	-	-	_	-	-	-	5090	5330	_	4.6	20	-	-	< 10
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	130 15	109 12	-	17.6 22.2	20 20	-	-	< 2

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

Approved by: C. GMTP 7JUL17



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

Project Name: MDU Heskett CCR Sample Description: MW101

Event and Year: Feb 2017

1 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W487 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 13:11 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
Н	* 6.9	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	4	mg/l	2	13765-85	24 Feb 17 15:53	SVS
pH - Field	6.70	units	NA	SM 4500 H+ B	23 Feb 17 13:11	JSM
Temperature - Field	6.00	Degrees C	NA	SM 2550B	23 Feb 17 13:11	JSM
Total Alkalinity	461	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	SVS
Conductivity - Field	4772	umhos/cm	1	EPA 120.1	23 Feb 17 13:11	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	2640	mg/l	5.00	ASTM D516-07	3 Mar 17 11:46	EMS
Chloride	14.9	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:01	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	4180	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	358	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Magnesium - Total	278	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Sodium - Total	610	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Potassium - Total	20.0	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Lithium - Total	0.69	mg/l	0.10	6010	1 Mar 17 13:47	KMD
Boron - Total	1.41	mg/l	0.10	6010	28 Feb 17 14:12	SZ
Calcium - Dissolved	344	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Magnesium - Dissolved	269	mg/1	1.0	6010	2 Mar 17 14:14	KMD
Sodium - Dissolved	575	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Potassium - Dissolved	19.8	mg/l	1.0	6010	2 Mar 17 14:14	KMD
Lithium - Dissolved	0.62	mg/l	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	1.30	mg/l	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	7 Mar 17 16:35	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Barium - Total	0.0145	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 14:20	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:00	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 conduct to sample quantity + = Due to in

= Due to concentration of other analytes
+ = Due to internal standard response



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Report Date: 17 Mar 17 Lab Number: 17-W487 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 13:11 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW101

Event and Year: Feb 2017

-	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0153	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	< 0.02 ^	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canto

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 con
! = Due to sample quantity + = Due to inf

= Due to concentration of other analytes + = Due to internal standard response

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



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Report Date: 17 Mar 17 Lab Number: 17-W488 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 9:36 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW102

Event and Year: Feb 2017

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
рН	* 7.1	units	N/A	SM4500 H+ B	24 Feb 17 17:0	O SVS
Total Suspended Solids	20	mg/l	2	I3765-85	24 Feb 17 15:5	3 SVS
pH - Field	6.86	units	NA	SM 4500 H+ B	23 Feb 17 9:3	5 JSM
Temperature - Field	6.35	Degrees C	NA	SM 2550B	23 Feb 17 9:3	5 JSM
Total Alkalinity	544	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:0	o svs
Conductivity - Field	9857	umhos/cm	1	EPA 120.1	23 Feb 17 9:3	6 JSM
Fluoride	0.14	mg/l	0.10	SM4500-F-C	24 Feb 17 17:0	O SVS
Sulfate	5470	mg/l	5.00	ASTM D516-07	3 Mar 17 11:4	6 EMS
Chloride	8.6	mg/l	1.0	SM4500-C1-E	2 Mar 17 9:2	8 EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:0	1 EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:3	2 EV
Total Dissolved Solids	9020	mg/l	10	I1750-85	24 Feb 17 14:4	1 SVS
Calcium - Total	418	mg/l	1.0	6010	7 Mar 17 13:2	6 KMD
Magnesium - Total	399	mg/l	1.0	6010	7 Mar 17 13:2	6 KMD
Sodium - Total	1760	mg/l	1.0	6010	7 Mar 17 13:2	6 KMD
Potassium - Total	21.9	mg/l	1.0	6010	7 Mar 17 13:2	
Lithium - Total	1.12	mg/l	0.10	6010	1 Mar 17 13:4	
Boron - Total	1.72	mg/l	0.10	6010	28 Feb 17 14:1	2 SZ
Calcium - Dissolved	416	mg/l	1.0	6010	2 Mar 17 14:1	
Magnesium - Dissolved	393	mg/l	1.0	6010	2 Mar 17 14:1	4 KMD
Sodium - Dissolved	1680	mg/l	1.0	6010	2 Mar 17 14:1	
Potassium - Dissolved	21.4	mg/l	1.0	6010	2 Mar 17 14:1	
Lithium - Dissolved	1.04	mg/l	0.10	6010	1 Mar 17 11:4	
Boron - Dissolved	1.66	mg/l	0.10	6010	28 Feb 17 15:2	
Antimony - Total	< 0.001	mg/l	0.0010	6020	7 Mar 17 16:3	
Arsenic - Total	0.0031	mg/l	0.0020	6020	7 Mar 17 16:3	
Barium - Total	0.0176	mg/l	0.0020	6020	7 Mar 17 16:3	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:3	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:3	
Chromium - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 16:3	
Cobalt - Total	0.0032	mg/l	0.0020	6020	7 Mar 17 16:3	
Lead - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:3	
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 14:2	
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	7 Mar 17 16:3	
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	7 Mar 17 16:3	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:0	0 KMD

RL = Method Reporting Limit



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Report Date: 17 Mar 17 Lab Number: 17-W488 Work Order #:82-0447

Account #: 002800

Date Sampled: 23 Feb 17 9:36 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

Bismarck ND 58501

Montana Dakota Utilities

Project Name: MDU Heskett CCR Sample Description: MW102

Samantha Marshall

Event and Year: Feb 2017

400 N. 4th

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	0.0028	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0182	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	0.0033	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	< 0.02 ^	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Cantlo

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 con
! = Due to sample quantity + = Due to inf

= Due to concentration of other analytes
+ = Due to internal standard response

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



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

Project Name: MDU Heskett CCR Sample Description: MW105

Event and Year: Feb 2017

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Report Date: 17 Mar 17 Lab Number: 17-W489 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 16:38 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
pH	* 6.9	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	15	mg/l	2	13765-85	24 Feb 17 15:53	SVS
pH - Field	6.73	units	NA	SM 4500 H+ B	23 Feb 17 16:38	JSM
Temperature - Field	6.68	Degrees C	NA	SM 2550B	23 Feb 17 16:38	JSM
Total Alkalinity	440	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	SVS
Conductivity - Field	8258	umhos/cm	1	EPA 120.1	23 Feb 17 16:38	JSM
Fluoride	0.29	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	3900	mg/l	5.00	ASTM D516-07	3 Mar 17 13:26	EMS
Chloride	409	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	28 Feb 17 13:01	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	7970	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	434	mg/1	1.0	6010	7 Mar 17 13:26	KMD
Magnesium - Total	855	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Sodium - Total	845	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Potassium - Total	22.2	mg/l	1.0	6010	7 Mar 17 13:26	KMD
Lithium - Total	1.34	mg/1	0.10	6010	1 Mar 17 13:47	KMD
Boron - Total	0.62	mg/l	0.10	6010	28 Feb 17 14:12	SZ
Calcium - Dissolved	414	mg/1	1.0	6010	2 Mar 17 15:14	KMD
Magnesium - Dissolved	830	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Sodium - Dissolved	810	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Potassium - Dissolved	22.3	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Lithium - Dissolved	1.30	mg/1	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	0.56	mg/1	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	7 Mar 17 16:35	KMD
Arsenic - Total	< 0.001	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Barium - Total	0.0221	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	7 Mar 17 16:35	KMD
Chromium - Total	< 0.0003	mg/1	0.0020	6020	7 Mar 17 16:35	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Lead - Total	< 0.002	mg/1	0.0025	6020	7 Mar 17 16:35	KMD
	< 0.0003	mg/l	0.0020	6020	8 Mar 17 14:20	KMD
Molybdenum - Total Selenium - Total	< 0.002	mg/l	0.0020	6020	7 Mar 17 14:20	KMD
Thallium - Total	< 0.01	mg/l	0.0020	6020	7 Mar 17 16:35	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:00	KMD
Allermony - Dissolved	C 0.001	g/ ±	0.0010	5020	0 PAGE 17 11.00	-410

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



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2 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W489 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 16:38 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW105

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0133 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	$< 0.02 ^ mg/1$	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

2) Mar 17 Claudite K. Canto Approved by:

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: \emptyset = Due to sample matrix # = Due to constant # = Due to incomplete the property of the property o

= Due to concentration of other analytes + = Due to internal standard response

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



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1 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W490 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 11:22 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW70

Event and Year: Feb 2017

	No. Providence		Mathad	Method Method Date			
	As Receive	ea	Method RL	Reference		Analyst	
	Result		КL	Reference	Anaryzed	шатуыс	
Metal Digestion				EPA 200.2	24 Feb 17 K	KMD	
Н	* 7.3	units	N/A	SM4500 H+ B		SVS	
Total Suspended Solids	3	mg/l	2	I3765-85	24 Feb 17 15:53 S	SVS	
pH - Field	6.98	units	NA	SM 4500 H+ B	23 Feb 17 11:22 J	JSM	
Temperature - Field	7.80	Degrees C	NA	SM 2550B	23 Feb 17 11:22 J	JSM	
Total Alkalinity	391	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00 S	SVS	
Conductivity - Field	3515	umhos/cm	1	EPA 120.1	23 Feb 17 11:22 J	JSM	
Fluoride	0.36	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00 S	SVS	
Sulfate	1590	mg/l	5.00	ASTM D516-07		EMS	
Chloride	47.1	mg/l	1.0	SM4500-Cl-E		EMS	
Mercury - Total	< 0.0002	mq/l	0.0002	EPA 245.1		EV	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32 F	ΞV	
Total Dissolved Solids	3160	mg/l	10	I1750-85		SVS	
Calcium - Total	316	mg/l	1.0	6010		KMD	
Magnesium - Total	125	mg/l	1.0	6010		KMD	
Sodium - Total	426	mg/l	1.0	6010		KMD	
Potassium - Total	11.5	mg/l	1.0	6010		KMD	
Lithium - Total	0.31	mg/l	0.10	6010		KMD	
Boron - Total	0.40	mg/l	0.10	6010		SZ	
Calcium - Dissolved	312	mg/l	1.0	6010	A second second second second second	KMD	
Magnesium - Dissolved	125	mg/l	1.0	6010		KMD	
Sodium - Dissolved	425	mg/l	1.0	6010		KMD	
Potassium - Dissolved	11.5	mg/l	1.0	6010		KMD	
Lithium - Dissolved	0.30	mg/l	0.10	6010		KMD	
Boron - Dissolved	0.39	mg/1	0.10	6010		SZ	
Antimony - Total	< 0.001	mg/l	0.0010	6020		KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020		KMD	
Barium - Total	0.0098	mg/l	0.0020	6020		KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020		KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020		KMD	
Chromium - Total	< 0.002	mg/1	0.0020	6020		KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020		KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020		KMD	
Molybdenum - Total	0.0025	mg/l	0.0020	6020	•	KMD .	
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020		KMD	
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020		KMD	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:00 F	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 co
! = Due to sample quantity + = Due to in

= Due to concentration of other analytes
+ = Due to internal standard response



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Page: 2 of 2

Report Date: 17 Mar 17 Lab Number: 17-W490 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 11:22 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW70

Event and Year: Feb 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0091 r	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005 t	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 t	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	0.0029	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	< 0.02 ^ 1	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved		mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Claudite K. Cantle

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

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



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

Project Name: MDU Heskett CCR Sample Description: MW80R

Event and Year: Feb 2017

Page: 1 of 2

Report Date: 17 Mar 17 Lab Number: 17-W491 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 13:32 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive	ed	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
					-	
Metal Digestion			2	EPA 200.2	24 Feb 17	KMD
Н	* 7.4	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	9	mg/l	2	I3765-85	24 Feb 17 15:53	SVS
pH - Field	7.12	units	NA	SM 4500 H+ B	23 Feb 17 13:32	JSM
Temperature - Field	5.68	Degrees C	NA	SM 2550B	23 Feb 17 13:32	JSM
Total Alkalinity	527	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	SVS
Conductivity - Field	5852	umhos/cm	1	EPA 120.1	23 Feb 17 13:32	JSM
Fluoride	0.32	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	2730	mg/l	5.00	ASTM D516-07	3 Mar 17 13:26	EMS
Chloride	161	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	3 Mar 17 12:09	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	5180	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	275	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Magnesium - Total	535	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Sodium - Total	565	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Potassium - Total	< 5 @	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Lithium - Total	0.78	mg/l	0.10	6010	1 Mar 17 14:00	KMD
Boron - Total	0.59	mg/l	0.10	6010	28 Feb 17 14:12	SZ
Calcium - Dissolved	273	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Magnesium - Dissolved	535	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Sodium - Dissolved	575	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Lithium - Dissolved	0.82	mg/l	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	0.53	mg/l	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	8 Mar 17 9:30	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Barium - Total	0.0105	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	8 Mar 17 9:30	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Molybdenum - Total	0.0035	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Selenium - Total	0.0590	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Antimony - Dissolved	< 0.001	mg/1	0.0010	6020	6 Mar 17 11:00	KMD
TITCIMOITY DIDDOLACO	- 0.001					

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



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2 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W491 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 13:32 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW80R

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0101 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	0.0038 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	0.0604 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Claudite K. Canto

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

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



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1 of 2 Page:

Report Date: 8 Mar 17 Lab Number: 17-W492 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17 15:28 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW3-90

Event and Year: Feb 2017

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
	* 7.2	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	4	mg/l	2	I3765-85	24 Feb 17 15:53	SVS
pH - Field	6.86	units	NA	SM 4500 H+ B	23 Feb 17 15:28	JSM
Temperature - Field	5.71	Degrees C	NA	SM 2550B	23 Feb 17 15:28	JSM
Total Alkalinity	539	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	svs
Conductivity - Field	4850	umhos/cm	1	EPA 120.1	23 Feb 17 15:28	JSM
Fluoride	0.14	mg/1	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	2550	mg/l	5.00	ASTM D516-07	3 Mar 17 13:26	EMS
Chloride	29.7	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	3 Mar 17 12:09	EV
Mercury - Dissolved	< 0.0002	mg/1	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	4320	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	496	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Magnesium - Total	228	mg/1	1.0	6010	7 Mar 17 14:26	KMD
Sodium - Total	565	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Potassium - Total	12.2	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Lithium - Total	0.24	mg/1	0.10	6010	1 Mar 17 14:00	KMD
Boron - Total	0.16	mg/l	0.10	6010	28 Feb 17 14:12	SZ
Calcium - Dissolved	474	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Magnesium - Dissolved	221	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Sodium - Dissolved	545	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Potassium - Dissolved	12.6	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Lithium - Dissolved	0.23	mg/1	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	0.15	mg/l	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	8 Mar 17 9:30	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Barium - Total	0.0104	mg/l	0.0020	6020	16 Mar 17 1:51	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Cadmium - Total	< 0.0005	mg/1	0.0005	6020	8 Mar 17 9:30	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	8 Mar 17 9:30	KMD
Cobalt - Total	< 0.002	mg/1	0.0020	6020	8 Mar 17 9:30	KMD
Lead - Total	< 0.0005	mg/1	0.0005	6020	8 Mar 17 9:30	KMD
Molybdenum - Total	0.0034	mg/1	0.0020	6020	16 Mar 17 16:51	KMD
Selenium - Total	0.0714	mg/1	0.0020	6020	16 Mar 17 16:51	KMD
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	8 Mar 17 9:30	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:00	KMD

RL = Method Reporting Limit

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



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Page:

2 of 2

Report Date: 8 Mar 17 Lab Number: 17-W492 Work Order #:82-0447

Account #: 002800

Date Sampled: 23 Feb 17 15:28 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: MW3-90

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0102 mg/l	0.0020	6020	16 Mar 17 16:51	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	0.0030 mg/l	0.0020	6020	16 Mar 17 16:51	KMD
Selenium - Dissolved	0.0684 mg/l	0.0020	6020	16 Mar 17 16:51	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canteo

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

! = Due to sample quantity

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



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Amended 18 Apr 17 (Sample Date)

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

Project Name: MDU Heskett CCR

Sample Description: MW33

Event and Year: Feb 2017

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Report Date: 17 Mar 17 Lab Number: 17-W493 Work Order #:82-0447 Account #: 002800

Date Sampled: 24 Feb 17 9:27 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
На	* 6.8	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	24 Feb 17 15:53	SVS
pH - Field	6.53	units	NA	SM 4500 H+ B	23 Feb 17 9:27	JSM
Temperature - Field	7.88	Degrees C	NA	SM 2550B	23 Feb 17 9:27	JSM
Total Alkalinity	460	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	SVS
Conductivity - Field	5234	umhos/cm	1	EPA 120.1	23 Feb 17 9:27	JSM
Fluoride	0.25	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	3770	mg/l	5.00	ASTM D516-07	3 Mar 17 13:26	EMS
Chloride	10.9	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	3 Mar 17 12:09	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	4970	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	460	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Magnesium - Total	432	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Sodium - Total	418	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Potassium - Total	20.8	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Lithium - Total	0.72	mg/l	0.10	6010	1 Mar 17 14:00	KMD
Boron - Total	0.52	mg/l	0.10	6010	28 Feb 17 14:12	SZ
Calcium - Dissolved	455	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Magnesium - Dissolved	430	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Sodium - Dissolved	418	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Potassium - Dissolved	21.6	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Lithium - Dissolved	0.70	mg/l	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	< 0.5 @	mg/l	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	8 Mar 17 9:30	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Barium - Total	0.0114	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	8 Mar 17 9:30	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



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Amended 18 Apr 17 (Sample Date)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW33

Event and Year: Feb 2017

Report Date: 17 Mar 17 Lab Number: 17-W493 Work Order #:82-0447 Account #: 002800

Date Sampled: 24 Feb 17 9:27 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	6 Mar 17 11:00	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0132 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	< 0.02 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canteo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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= Due to concentration of other analytes
+ = Due to internal standard response

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



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

Project Name: MDU Heskett CCR Sample Description: DUP 1

Event and Year: Feb 2017

1 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W494 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
Metal Digestion				EPA 200.2	24 Feb 17		KMD
рН	* 7.2	units	N/A	SM4500 H+ B	24 Feb 17 1		SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	24 Feb 17 1		SVS
Total Alkalinity	540	mg/l CaCO3	20	SM2320-B	24 Feb 17 1		SVS
Fluoride	0.14	mg/l	0.10	SM4500-F-C	24 Feb 17 1		SVS
Sulfate	2580	mg/l	5.00	ASTM D516-07		8:46	EMS
Chloride	29.6	mg/l	1.0	SM4500-Cl-E		9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	3 Mar 17 1		EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 1		EV
Total Dissolved Solids	4430	mg/l	10	I1750-85	24 Feb 17 1	.4:41	SVS
Calcium - Total	500	mg/l	1.0	6010	7 Mar 17 1	.4:26	KMD
Magnesium - Total	230	mg/l	1.0	6010	7 Mar 17 1	.4:26	KMD
Sodium - Total	560	mg/l	1.0	6010	7 Mar 17 1	.4:26	KMD
Potassium - Total	12.0	mg/l	1.0	6010	7 Mar 17 1	4:26	KMD
Lithium - Total	0.23	mg/l	0.10	6010	1 Mar 17 1		KMD
Boron - Total	0.15	mg/l	0.10	6010	28 Feb 17 1	.5:12	SZ
Calcium - Dissolved	466	mg/l	1.0	6010	2 Mar 17 1	.5:14	KMD
Magnesium - Dissolved	216	mg/l	1.0	6010	2 Mar 17 1	.5:14	KMD
Sodium - Dissolved	535	mg/l	1.0	6010	2 Mar 17 1	.5:14	KMD
Potassium - Dissolved	12.4	mq/l	1.0	6010	2 Mar 17 1	.5:14	KMD
Lithium - Dissolved	0.22	mg/l	0.10	6010	1 Mar 17 1	1:47	KMD
Boron - Dissolved	0.14	mg/l	0.10	6010	28 Feb 17 1	.5:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	8 Mar 17	9:30	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17	9:30	KMD
Barium - Total	0.0117	mg/l	0.0020	6020	8 Mar 17	9:30	KMD
Beryllium - Total	< 0.0005	mg/1	0.0005	6020	8 Mar 17	9:30	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17	9:30	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17	9:30	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17	9:30	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17	9:30	KMD
Molybdenum - Total	0.0038	mg/l	0.0020	6020	8 Mar 17	9:30	KMD
Selenium - Total	0.0662	mg/1	0.0020	6020	8 Mar 17	9:30	KMD
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	8 Mar 17	9:30	KMD
Antimony - Dissolved	< 0.001	mg/1	0.0010	6020	6 Mar 17 1	1:00	KMD
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020	6 Mar 17 1	1:00	KMD
Barium - Dissolved	0.0117	mg/l	0.0020	6020	6 Mar 17 1		KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 1		KMD

RL = Method Reporting Limit

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



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Page: 2 of 2

Report Date: 17 Mar 17 Lab Number: 17-W494 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: DUP 1

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	0.0039 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	0.0798 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

* Holding time exceeded

Claudite K. Canto Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

@ = Due to sample matrix # = Due to con
! = Due to sample quantity + = Due to in

= Due to concentration of other analytes + = Due to internal standard response

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



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Samantha Marshall

Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Heskett CCR Sample Description: DUP 2

Event and Year: Feb 2017

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Report Date: 17 Mar 17 Lab Number: 17-W495 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	24 Feb 17	KMD
pH	* 7.5	units	N/A	SM4500 H+ B	24 Feb 17 17:00	SVS
Total Suspended Solids	4	mq/l	2	I3765-85	24 Feb 17 15:53	SVS
Total Alkalinity	526	mg/l CaCO3	20	SM2320-B	24 Feb 17 17:00	SVS
Fluoride	0.34	mg/l	0.10	SM4500-F-C	24 Feb 17 17:00	SVS
Sulfate	3000	mg/l	5.00	ASTM D516-07	3 Mar 17 13:26	EMS
Chloride	159	mg/l	1.0	SM4500-Cl-E	2 Mar 17 9:28	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	3 Mar 17 12:09	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Feb 17 13:32	EV
Total Dissolved Solids	5090	mg/l	10	I1750-85	24 Feb 17 14:41	SVS
Calcium - Total	279	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Magnesium - Total	535	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Sodium - Total	570	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Potassium - Total	< 5 @	mg/l	1.0	6010	7 Mar 17 14:26	KMD
Lithium - Total	0.82	mg/1	0.10	6010	1 Mar 17 14:00	KMD
Boron - Total	0.50	mg/l	0.10	6010	28 Feb 17 15:12	SZ
Calcium - Dissolved	264	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Magnesium - Dissolved	515	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Sodium - Dissolved	545	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	2 Mar 17 15:14	KMD
Lithium - Dissolved	0.81	mg/l	0.10	6010	1 Mar 17 11:47	KMD
Boron - Dissolved	< 0.5 @	mg/l	0.10	6010	28 Feb 17 15:24	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	8 Mar 17 9:30	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Barium - Total	0.0110	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Molybdenum - Total	0.0036	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Selenium - Total	0.0561	mg/l	0.0020	6020	8 Mar 17 9:30	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	8 Mar 17 9:30	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Mar 17 11:00	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Barium - Dissolved	0.0097	mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Mar 17 11:00	KMD

RL = Method Reporting Limit



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Report Date: 17 Mar 17 Lab Number: 17-W495 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR Sample Description: DUP 2

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	0.0038 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	0.0661 mg/l	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

^{*} Holding time exceeded

Approved by:

Claudite K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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



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1 of 2 Page:

Report Date: 17 Mar 17 Lab Number: 17-W496 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

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

Project Name: MDU Heskett CCR

Sample Description: FB2

Event and Year: Feb 2017

	As Received Result		Method RL	Method Reference	Date Analy	zed /	Analyst
Metal Digestion				EPA 200.2	24 Fe	b 17	KMD
рН	* 6.0	units	N/A	SM4500 H+ B	24 F	eb 17 17:00	SVS
Total Suspended Solids	< 2	ng/1	2	I3765-85	24 F	eb 17 15:53	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B		eb 17 17:00	SVS
Fluoride	< 0.1	ng/l	0.10	SM4500-F-C	24 F	eb 17 17:00	SVS
Sulfate	< 5 t	mg/l	5.00	ASTM D516-07	3 Ma	r 17 13:26	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	2 Ma	ar 17 9:28	EMS
Mercury - Total		mg/l	0.0002	EPA 245.1	3 Ma	ar 17 12:09	EV
Mercury - Dissolved		mg/l	0.0002	EPA 245.1	28 F	eb 17 13:32	EV
Total Dissolved Solids		mg/l	10	I1750-85	24 F	eb 17 14:41	SVS
Calcium - Total		mg/1	1.0	6010	7 Ma	ar 17 14:26	KMD
Magnesium - Total		mg/1	1.0	6010	7 Ma	ar 17 14:26	KMD
Sodium - Total		mg/1	1.0	6010	7 Ma	ar 17 14:26	KMD
Potassium - Total		mg/l	1.0	6010	7 Ma	ar 17 14:26	KMD
Lithium - Total		mg/l	0.10	6010	1 Ma	ar 17 14:00	KMD
Boron - Total		mg/1	0.10	6010	28 F	eb 17 15:12	SZ
Calcium - Dissolved		mg/1	1.0	6010	2 M	ar 17 15:14	KMD
Magnesium - Dissolved		mg/1	1.0	6010	2 M	ar 17 15:14	KMD
Sodium - Dissolved		mg/1	1.0	6010	2 M	ar 17 15:14	KMD
Potassium - Dissolved		mg/1	1.0	6010	2 M	ar 17 15:14	KMD
Lithium - Dissolved		mg/l	0.10	6010	1 M	ar 17 11:47	KMD
Boron - Dissolved		mg/l	0.10	6010	28 F	eb 17 15:24	SZ
Antimony - Total		mg/l	0.0010	6020	8 M	ar 17 9:30	KMD
Arsenic - Total		mg/l	0.0020	6020	8 M	ar 17 9:30	KMD
Barium - Total		mg/l	0.0020	6020	8 M	ar 17 9:30	KMD
Beryllium - Total		mg/1	0.0005	6020	8 M	ar 17 9:30	KMD
Cadmium - Total		mg/1	0.0005	6020	8 M	ar 17 9:30	KMD
Chromium - Total		mg/1	0.0020	6020	8 M	ar 17 9:30	KMD
Cobalt - Total		mg/1	0.0020	6020	8 M	ar 17 9:30	KMD
Lead - Total		mg/l	0.0005	6020	8 M	ar 17 9:30	KMD
Molybdenum - Total		mg/l	0.0020	6020	8 M	ar 17 9:30	KMD
Selenium - Total		mg/l	0.0020	6020	8 M	ar 17 9:30	KMD
Thallium - Total		mg/1	0.0005	6020	8 M	ar 17 9:30	KMD
Antimony - Dissolved		mg/l	0.0010	6020	6 M	ar 17 11:00	KMD .
Arsenic - Dissolved		mg/1	0.0020	6020		ar 17 11:00	KMD
Barium - Dissolved		mg/1	0.0020	6020	6 M	ar 17 11:00	KMD
Beryllium - Dissolved		mg/l	0.0005	6020	6 M	ar 17 11:00	KMD

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Samantha Marshall Montana Dakota Utilities

400 N. 4th

Bismarck ND 58501

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Report Date: 17 Mar 17 Lab Number: 17-W496 Work Order #:82-0447 Account #: 002800

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 2.4C ROI

Project Name: MDU Heskett CCR

Sample Description: FB2

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	6 Mar 17 11:00	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	6 Mar 17 11:00	KMD
Selenium - Dissolved	$< 0.02 ^ mg/1$	0.0020	6020	6 Mar 17 11:00	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Mar 17 11:00	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canteo

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 con
! = Due to sample quantity + = Due to inf

= Due to concentration of other analytes + = Due to internal standard response

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



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



March 23, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4th St. Bismarck, ND 58501

RE: Groundwater Sampling Event- @ MDU Heskett Ash Site

Dear Ms. Marshall:

From February 21-23, 2017, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule and the NDDH analytical list.

All wells were located and were found to be in generally good condition. Access to wells was hindered by the amount of snow fall the area had received. Well 104 was not sampled during this event due to a snow drift that covered the well and hillside where the well was located. The wells for CCR were purged and sampled using a dedicated bladder pump and BARR's SOP for low flow purging and sampling. The samples collected were, placed on ice and transported back to the MVTL laboratory in Bismarck, ND for analysis. The field data report for the sampling event accompanies this letter.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer

MVTL Field Services



MDU Heskett

GROUNDWATER SAMPLING

WO#

CCR

RadChem

82-0401

82-0402

82-0448

82-0447

400 N. 4th St Bismarck, ND 58501

701-222-7829

Attn: Samantha Marshall

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	WATER LEVEL END	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	рН	Turbidity NTU	SAMPLE APPEARANCE OR COMMENT
2-90	21-Feb-17	14:27	21-Feb-17	14:47	1686.60	1666.60	20.00	21.69	2000.0	Bladder	8.01	7022	6.93	0.31	clear
3-90	23-Feb-17	15:03	23-Feb-17	15:28	1686.01	1669.96	16.05	16.20	2500.0	Bladder	5.71	4850	6.86	0.79	clear
13	21-Feb-17	8:57	21-Feb-17	9:22	1724.98	1694.96	30.02	30.70	2500.0	Bladder	7.14	10348	6.86	0.71	clear
33	23-Feb-17	8:32	23-Feb-17	9:27	1717.91	1676.65	41.26	44.50	5500.0	Bladder	7.88	5234	6.53	2.03	clear
70	23-Feb-17	10:47	23-Feb-17	11:22	1706.36	1687.02	19.34	22.80	3500.0	Bladder	7.80	3515	6.98	0.41	clear
80R	23-Feb-17	13:07	23-Feb-17	13:32	NA	NA	14.27	14.54	2500.0	Bladder	5.68	5852	7.12	3.12	clear
44R	21-Feb-17	10:58	21-Feb-17	11:33	NA	NA	27.22	27.28	3500.0	Bladder	8.14	9110	6.57	11.90	clear
101	23-Feb-17	12:16	23-Feb-17	13:11	NA	NA	36.90	40.55	5500.0	Bladder	6.00	4772	6.70	7.33	cleár
102	23-Feb-17	9:01	23-Feb-17	9:36	NA	NA	16.64	19.08	3500.0	Bladder	6.35	9857	6.86	7.75	clear
103	21-Feb-17	12:31	21-Feb-17	13:16	NA	NA	32.75	36.63	4500.0	Bladder	8.11	5067	6.74	0.72	clear
104	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	see below*
105	23-Feb-17	15:28	23-Feb-17	16:38	NA	NA	12.21	12.51	7000.0	Bladder	6.68	8258	6.73	9.45	clear
1-90	NA	NA	21-Feb-17	15:36	1675.86	1664.95	10.91	NA	NA	NA	NA	NA	NA	NA NA	water level only

^{*} could not locate Well 104 due to snow drift that covered the hillside where the well was located.

MVTL Calibration Worksheet

Site: MDU He	skett		echnician: Davi	Cen Nieswaay
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H147	36	#3 556 MPS 12E102056
	Pre Site Ca	libration		Post Site Check
Date: 23FeS	17 Time: 1210			Time: \$752
			mv Range +/-	
рН	Temp °C Pre Cal Post C		50	pH Temp °C Reading
Buffer 7	19.61 7.03 7.08		0 +/- 50	Buffer 7
Buffer 10	19,53 10,03 10,00	9.95-10.05 -181.9	-180 +/- 50	
Conductivity			Check	Conductivity
Buffer 10000	19.15 10254 1000	3 ±10% Buffer 5000	4990	Buffer 5000 18,19 4918
ORP				
231 mV @ 25C	7,72 237,9 231,			
DO		Barometric Pressure (mm	ı Hg)	
	16.83 10.08 9.05	mg/L 716,7		
Date: 24Fey	77 Time: 0729			Time: 1949
рН	Temp °C Pre Cal Post C	cal Post Cal Range mv	mv Range +/- 50	pH Temp °C Reading
Buffer 7	18,52 7,03 7,00	0 6.95-7.05 -12.2	0 +/- 50	Buffer 7 [7,33] 6,29
Buffer 10	18,48 10,01 10,00	9.95-10.05	-180 +/- 50	
Conductivity			Check	Conductivity
Buffer 10000	18,05 9854 1000	±10% Buffer 5000	5001	Buffer 5000 17,87 5028
ORP				
231 mV @ 25C	7.82 229.4 231.	±10 mV		
DO	16,76 8,30 9,19	Barometric Pressure (mn	n Hg)	
/~	16-83 10.08 9.05	mg/L 719.5		

MVTL Calibration Worksheet

Site: MDU Heskett Technician: Instrument #1 650 MDS 08F100203 #2 650 MDS 04H14736 #3 556 MPS 12E102056 (Circle One): **Pre Site Calibration Post Site Check** 1630 Date: 21 Feb17 Time: 6730 Time: mv Range +/рΗ Post Cal Range 50 Temp °C Pre Cal Post Cal mv рΗ Temp °C Reading 6.97 -20.3 7.03 7.00 20,59 6.95-7.05 Buffer 7 0 +/- 50 Buffer 7 20.52 -193,7 10,03 (0,00 Buffer 10 9.95-10.05 -180 +/- 50 Conductivity Conductivity Check 20.59 10717 10000 20.26 4990 4996 Buffer 10000 Buffer 5000 ±10% Buffer 5000 ORP 8,13 254.4 250.5 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) 16,15 97.3% 93.0% 757.80 mg/L 1735 23 feb 17 Time: 0735 Date: Time: mv Range +/-Post Cal Range рΗ Temp °C Pre Cal Post Cal mν рΗ Temp °C Reading 50 6.95 7.00 6.97 19.24 -17.218.66 Buffer 7 6.95-7.05 0 +/- 50 Buffer 7 19.24 10,00 10.00 -190,2 9.95-10.05 -180 +/- 50 Buffer 10 Conductivity Conductivity Check 19,30 4987 18.72 4965 9950 10000 Buffer 10000 Buffer 5000 ±10% Buffer 5000 ORP 252.6 7.55 250.5 231 mV @ 25C ±10 mV DO Changed \$0 Hembrane Barometric Pressure (mm Hg) 63.0% 100,0% 759,82 15,59 mg/L



Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	MW101	_
Sampling Personal:	Jeren May	

Phone: (701) 258-9720

` '							_						
Weather Conditions:		Temp:	35 °F		Wind:	N@5-	(0		Precip	: Sun	ny / Partly C	Cloudy / Clou	īďv>
1	Well Info	rmation						Sa	mpling l	nformati			
Well Locked?	Yes	(N)			Purgir	ng Method:	Blad				ntrol Setting		
Well Labeled?	Yes	No					ng Method:	Blad			Purge:		se
Casing Straight?	Xes	No					ed Equip?:	(Yes)	Mo	1	Recover:	51	se
Grout Seal Intact?	Kes	No	Not Visi	ble			Sample?:	Yes	(No)		PSI:	40	30.
Repairs Necessary:						Duplicate S	· · · · · · · · · · · · · · · · · · ·	4			Pumping R		mL/mi
Casing :	Diameter:		2"						·	_1	r amping i	<u> </u>	11122110
Water Level Befo	re Purge:	36,0	10	ft		Р	urge Date:	23 feb/	7	Time Purg	ing Began:	12/6	am/pr
. Total W	ell Depth:	~		ft		Well Pt	urged Dry?	Yes	(Nb)		Purged Dry:	100	am/pr
Wel	ll Volume:			liters			mple Date:	23 Sep1=			f Sampling:	136/	am/@r
Depth to Top	of Pump:	-		· ft			/			J		1301	CH 1114
Water Level Afte	r Sample:	ě4i	0,55	ft		Bottle	CCI	R: 11 Raw	500ml Nit	irc 500ml	Nitric (filtere	d), 4-1L Nitri	
Measurement	t Method:	Electric Wa	ater Level Inc	dicator		List:			00011121111	, 0001112	ratio (micro	a), Tre retur	
						<u> </u>							

Field Measurements

1					\		T		, , , , , , , , , , , , , , , , , , , 	
Stabiliz (3 conse		Temp (°C)	Spec. Cond.	рH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1221	6.60	4820	6.01	3.09	59.2	99.6	37.92	500	Clear
2	1226	6.70	4800	6,77	2,07	41.1	59,9	38,29	500	Clear
3	1231	6,21	4826	6,77	1,84	35,0	41,9	38,52	500	Clear
4	1236	6.80	4816	6.75	1,62	31.1	30,2	38,80	500	Clear
5	1246	6,30	4799	6,73	1166	31,3	3-1-3163		1000	Cliev
6	125%	6.31	4772	6,73	1,46	32.5	14.9	39,30	500	Clear
7	1256	6.83	4767	6,74	1,50	32.6	16.6	39.41	500	Clear
8	1301	6,23	4 764	6,76	1,54	33.9	8:23	39,45	500	Clea
9	1306	6.03	4804	6700	1,72	37.0	7,22	39.46	500	Clear
10	1311	6,00	4772	6,70	1179	39,4	7.33	39,48	500	Clear
Stabilized:	∕Y∳\$	No	•			To	tal Volume		\$5 <i>0</i> 0	mL

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	MW 102,
Sampling Personal:	Jery Ely

Phone: (701) 258-9720

Weather Conditions: Temp: 35 °F Wind: L

Weather Conditions:	Temp:	35	°F	Wind:	NOS-10	Precip: Sunny / Partly Cloudy / Cloud			ıdv		
Well Information						Sampling Information					
Well Locked? Yes	(QZ				Purging Method:				ntrol Settings	3	
Well Labeled? Yes>	No				Sampling Method:	Bladder	1 .	Purge:	5	sec.	
Casing Straight? Yes	No				Dedicated Equip?:	Yes No	1	Recover:	55	sec.	
Grout Seal Intact? Yeş	No	Not \	∕isible		Duplicate Sample?:	Yes No		PSI:	50		
Repairs Necessary:					Duplicate Sample ID:		1	Pumping Ra	ate: 100	mL/min	
Casing Diameter:		2"					1 [, 4,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	410. 700	***************************************	
Water Level Before Purge:	llo.	64	ft		Purge Date:	23 Feb/7	Time Purgi	ng Began:	0901	@n/pm	
Total Well Depth:			ft		Well Purged Dry?			urged Dry:	- 101	am/pm	
Well Volume:			liters		Sample Date:	23 Feb /7		Sampling:	0936	am/pm	
Depth to Top of Pump:	-		ft				1		0130	Emphili	
Water Level After Sample:	19.	0G	ft		Bottle CC	CR: 1L Raw, 500mL Nit	irc 500ml N	litric (filtered	d) 4-11 Nitri		
Measurement Method: Electric Water Level Indicator			List:		iro, coomic r	vicio (interes	u), ∓- 1∟ 14101				

Field Measurements

	lization secutive)	Temp (°C)	Spec. Cond.	На	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	T COMPOSED	clear, slightly turbid, turbid
1	0906	6.07	9685	6.84	2.88	1.8	40.1	17.30	52	Clear
2	0911	6,20	9898	6.88	1,98	~23,3	35.1	17,48	500	Clear
3	0916	6.35	9910	6.86	1.78	~29.1	13.2	17.77	500	Clear
4	0921		7842	6.85	1,75	-29.9	9.69	17.91	500	Cla
5	७ १२८	6.13	9948	6,90	1.05	-32,5	799	17.92	500	Clean
6	0931	6.43	9900	691	1,80	-35,3	2,80	18,06	Seo	Cles
7	0936	6,35	9857	6,86	1.86	-32.8	7,75	18:11	500	Clea
8								<u></u>		
9										
10	: (Pes									

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	mw 105
Sampling Personal	Dance Allies

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

			No.				-						-
Weather Conditions:		Temp:	30°F		Wind:	N# 10			Precip:	Sun	ny / Partly C	loudy(/ Clor	
	Well Info	rmation		***				Sa	ampling I			Noudyly Clor	July 5
Well Locked?	Yes	100)				D				Indimati	·		
Well Labeled?						Purging I		Blac	der		Co	ntrol Setting:	S
	¿Yes>	No_				Sampling I	Method:	Blad	ider		Purge:	5	sec.
·Casing Straight?	Yes-	No				Dedicated	Equip?:	(Yes)	No		Recover:	57	sec.
Grout Seal Intact?	رُYes	No	Not Visi	ble		Duplicate Sa	mple?:	Yes	(No)		PSI:		
Repairs Necessary:	· Andrewson Annual					Duplicate Sar	nple ID:				Pumping R	ato: 2% >	mL/min
Casing	Diameter:		2"							l	r dinping it	ate. 700	TIL/IIIII
Water Level Befo	ore Purge:		12,21	ft		Purc	e Date:	23F2	1:1-7	Time Pura	ing Began:	1528	am/pm
Total W	/ell Depth:		~	ff		Well Purg						15-20	
	il Volume:						-	Yes	(No)		urged Dry:	- Linear Charles	am/pm
				liters		Samp	e Date:	23F061	!7	Time of	Sampling:	1638	am/pm
Depth to Top	of Pump:	3	1,24	ft						•••••			
Water Level Afte	er Sample:	12	2,51	ft		Bottle	CC	R: 11 Raw	500ml Niti	irc 500ml	Nitric (filtere	d), 4-1L Nitri	
Measuremen	t Method:	Electric \	Water Level Inc	licator		List:			00011112 11111	iro, ocornic	Maio (micre	u), 12 Mili	<u>-</u>
					Maasura	monte							

	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1533	6,33	7766	6,76	1,85	2296	12.3	12.56	500	Clar
2	1538	4.80	7845	6,74	1,45	221.5	9,40	12,45	500	
3	1518	6.85	8008	6.74	1,22	2133	12,1	14.47	1000	Cle
4	1698	669	8188	6.73	1117	204.9	10.7	12.45	2000	dn-
5	1528	6,71	8253	6,73	1,15	201,3	9.32	12,45	2000	den
6	1633	6,74	8257	6,73	1,13	11998	9.42	12,45	500	Clera
7	1638	6.68	8258	6.73	1,16	198,5	945	1245	500	M12-
8			0 0				7		,	
9										
10										
Stabilized:	(Yes	No				Tr	tal Volume	Removed:	الانتان السن	ml

Comments:

I otal Volume Removed: _____mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	May 70.
Sampling Personal:	Jeven Men -
	1 6 7

2616 E. Broadway Ave, Bismarck, ND Phone: (704) 250 0720

Phone: (701) 258-91	720							()		
Weather Conditions:		Temp:	35	°F	Wind:	N85-10	Precip	Sunny / Partly Cl	oudy /CTc	oudy >
\	Well Info	rmation					Sampling I	nformation		
Well Locked?	Yes	No				Purging Method	: Bladder	Con	trol Settino	ıs
Well Labeled?	yes)	No				Sampling Method	: Bladder	1	6	sec
Casing Straight?		No				Dedicated Equip?	: Yes No		54	sec
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate Sample?:	Yes No	PSI:	70	
Repairs Necessary:						Duplicate Sample ID		Pumping Rat	te: /∞	mL/mir
Casing	Diameter:		2"					1		
Water Level Befo	re Purge:	jol	.34	ft		Purge Date	: 23 feb 17_	Time Purging Began:	1047	am/pm
Total W	ell Depth:			ft		Well Purged Dry		Time Purged Dry:	<u> </u>	am/pm
Wel	ll Volume:	حــــ		liters		Sample Date	: 23 Rep 17	Time of Sampling:	1122	am/pm
Depth to Top	of Pump:			ft						
Water Level Afte	r Sample:	27	?. % 0	ft		Bottle C	CR: 1L Raw, 500mL Nit	irc, 500mL Nitric (filtered), 4-1L Nit	ric
Measurement	t Method:	Electric V	Vater Leve	el Indicator		List:				
				 1_1	× #				· · · · · · · · · · · · · · · · · · ·	

Field Measurements

Stabili (3 cons	zation ecutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1052	733	3941	6.99	1.41	133,1	0.87	21,08	్దరు	Clear
2	1057	7.25	3906	6.95	1119	13 [.]	0,35	21.39	500	Clear
3	lior	7,10	3887	6,96	1,24	124,9	0,30	21,55	500	Clear
4	1107	7.56	3 828	6,97	1,02	121.7	0.40	21.80	5∞	Elex
5	1112	7.59	3717	6,98	0,99	117.1	0.32	22,00	<i>⊈0</i> €	Cleer
6	1117	7.54	3653	6,98	0.98	114,5	0.27	22.16	500	Clex
7	1122	7,60	3515	6,98	0.97	113,0	0,41	22,24	\$ <i>⊌</i> ⊘	Clear
8										**************************************
9										
10										
Stabilized:	(Yes)	No				To	tal Volume	Removed:	マミハシ	mL ,

Comments:

Total Volume Removed: 350つ mL



Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	MWROR	
Sampling Per	sonal: Marren Alieswaas	_

Phone: (701) 258-9720

Weather Conditions:		Temp:	32-°F		Wind:	NEU)		Precip	: Sun	ny / Partiv C	loudy //Clou	udv
	Well Info	rmation						Sa		Informatio			<u> </u>
Well Locked?	Yes	Ño				Purgir	ng Method:	Blad				ntrol Setting	
Well Labeled?	Yes	No					ng Method:	Blad		1	Purge:		sec
Casing Straight?	Xes	No					ed Equip?:	 ∕ ∕ ∕ ∕ ∕ ∕ ∕ ∕ / / / / / / / / / /	No.	1	Recover:	57	sec
Grout Seal Intact?	Yes	No	Not Visi	ble			Sample?:	¥6s	No	-	PSI:		360
Repairs Necessary:							Sample ID:	NUD		1	Pumping R	ate: /OO	mL/mir
Casing	Diameter:		2"			· · · · · · · · · · · · · · · · · · ·		7 017			i umping re	atc. 7 () ()	111111111111111111111111111111111111111
Water Level Bef	ore Purge:	·	14,27	ft		Р	urge Date:	23 Fab.	, 7	Time Pura	ing Began:	1307	am/pfi
Total V	Vell Depth:			ft			urged Dry?	Yes	(40)		urged Dry:	-1	am/pn
We	ell Volume:	*	·	liters			mple Date:				Sampling:	1372	
Depth to Tor	o of Pump:	1	9,30	ft			p.o oato.	011-41	-/	1	oumping.	1000	am/pn
Water Level After	er Sample:		14.54	ft		Bottle	CC	R: 11 Raw	500ml Ni	fire 500ml	Nitria (filtara	d), 4-1L Nitri	
Measuremer			Water Level Inc	dicator		List:		it. it. itaw,	SOUTH IN	arc, Journe	Millio (Illere	u), 4-11. Niti	
					Monore								

Field Measurements

Stabili (3 cons	zation ecutive)	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	[312	6.89	5837	7,08	2.07	236.1	4.37	14.48	500	clear
2	1317	5.82	5849	7.10	1,25	232,2	4.48	14,50	500	Clean
3	1322	5.63	5841	7011	1.03	230.6	3,04	14,50	500	Clear
4	1327	5,59	5854	7012	1,01	229,1	2198	14,50	500	
5	1332	5,68	5852	7,12	0.99	228,0	3,12	14.50	500	Clean
6				•						
7										
8										
9										
10										
Stabilized:	/ Yes /	Total Volume Removed: 25 00 mL								



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	3-90
Sampling Personal:	Jean plan

Phone: (701) 258-9720

Weather Conditions:		Temp:	30 %		Wind:	N @ S -	-10		Precip:	Sunr	ıy / Partly C	loudy / Clo	udy)	
	Well Info	rmation						Sa	mpling I	nformatic	n			
Well Locked?	Yes	(No.				Purgir	Purging Method: Bladder			Control Settings				
Well Labeled?	Vés	No				Samplir	ng Method:	Blade	der		Purge:	4	sec.	
Casing Straight?	YES)	No				Dedicat	ed Equip?:	(ES)	No		Recover:	56	sec	
Grout Seal Intact?	Yes	No	Not Vis	ble		Duplicate	Sample?:	KES)	No		PSI:	20		
Repairs Necessary:						Duplicate \$	Sample ID:	Dupl			Pumping R	ate: / <i>o</i> o	mL/min	
Casing	Diameter:		2"											
Water Level Befo	ore Purge:		6.05	ft		Р	urge Date:	284617	_	Time Purg	ing Began:	/S03	am/pm	
Total W	/ell Depth:	•		ft		Well Pu	urged Dry?		(No)	Time P	urged Dry:	<u> </u>	am/pm	
We	ell Volume:	-7		liters		Sa	mple Date:	234666	7	Time of	Sampling:	1528	am/øm	
Depth to Top	of Pump:	-		ft										
Water Level Afte	er Sample:		16,20	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL I	Nitric (filtere	d), 4-1L Nitr	ic	
Measuremen	t Method:	Electric V	Vater Level In	dicator		List:			•					
		Transfer and Transfer												

Field Measurements

	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1508	5.74	4888	6,81	2.02	-114,2	1173	16.20	<i>కో</i> ల	Clear
2	1513	5,68	4844	6,82	2,66	-122,0	1.45	16.18	500	ilear
3	1318	5.67	4856	6.84	1,64	-129.7	1,08	16,15	5%	ilea
- 4	1523	5.69	4850	6.85	1162	-132.9	0,84	16.14	20	tles
5	(528	5.71	4850	6,86	1,62	-132.0	0.79	16,13	కో శిం	Clear
6										
7				•-						
8					252					
9										
10	: Xes									

Stabilized: Yes



Groundwater Assessment

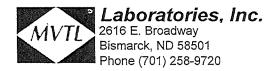
Company:	MDU Hesket	t
Event:	2017	
Sample ID:	Mh 33	
Sampling Per	sonal: Dr. rra	11/1000

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

							, ,	,			C. Callerina	~		
Weather Co	onditions:		Temp:	20	°F	Wind:	L196	77		Precip	: /Sun	nỳ / Partly C	Cloudy / Clou	ıdy
		Well Info	ormation				,		Sa	mpling l	nformatio	ón		
Well	Locked?	Yes	(No)		·		Purgi	ng Method:	Blac		С		ontrol Settings	
Well	Labeled?	Yes>	No					ng Method:	Bladder		1	Purge:	12	sec.
Casing	Straight?	Yes)	No				Dedicated Equip?:			No		Recover:	40	sec.
Grout Se	eal Intact?	Yes	No	(Ñot V	<u>ʻisib</u> le		Duplicate	Sample?:	Yes	No)		PSI:	S Lab	
Repairs Nec	cessary:						Duplicate	Sample ID:			1	Pumping R	ate: 700	mL/min
	Casing	Diameter:		2"							=			
Water	Level Bef	ore Purge:		41.26	ft		F	urge Date:	2480	617	Time Purg	ing Began:	B832	am/pm
	Total V	Vell Depth:		- managem	ft		Well P	urged Dry?	Yes	€NO	Time F	Purged Dry:	market de sant	-am/pm
		eli Volume:		********	liters		Sa	mple Date:						am/pm
		o of Pump:		44.5 <u>0</u>	ft									44
		er Sample:	山山		ft		Bottle	CC	CR: 1L Raw,	500mL Nit	irc, 500mL	Nitric (filtere	d), 4-1L Nitri	5
Me	easuremen	nt Method:	Electric	Water Level	Indicator		List:			.,				
	Field Measurements													
Stabiliza	ation	Temp	Spec.		DO	ORP	Turbidity	Water	mL		Discription	:		
(3 conse	cutive)	(°C)	Cond.	рH	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity	, Color, Od	or Ect		
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft			, slightly turbid.			
1	J837	6,49	5652	617	3.25	-13.6	48.1	41.48	500	Clizz	1414 Y	455		
, 2	0842	7,24	\$491	6,58	7,52	219,6	97.7	41.58	500			7777		
30104	2952	7.64	5290	6,54	1.73	@Z,3	15.1	41,58	2000	c/-e	· · · · · · · · · · · · · · · · · · ·			
4-4/2011	0912	788	5248	6,53	1.60	2.6	4.25	41.63	1000	66_				
5 (0917	7.61	5243	653	1125	29	2,22	41,54	500	Cl_				
6 (2590	1.00	5229	6,53	1,69	1,2	2/15/	41.6.7	500	C. E.				
7	9727	7.88	5234	633	1,65	5.9	2,03	41.43	500	06	and the same of th	·····		
8								1 2	7.1					
9														
10	(
Stabilized:	Yes	No	-			T	otal Volume	Removed:	5.500	mL				

A AN 24 Feb 17

Comments:



Chain of Custody Record

Project Name	: :	Event:	Work Order Number:				
	MDU Heskett	Feb 2017) Da-0447				
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Carbon Copy: Attn: Address:	Name of Sampler(s): Jermy Meyer Darren Wilgwazz				

	Sample Information								Bottle Type Field Parameters					
Lab Number	Sample ID	D_{ale}	Time	Sample Type		1 Mer	500mL Nitric	Jooml Nitric (filtered)			Temp (°C)	Spec. Cond.	Ha	Analysis Required
W487	MW101	235417	131(GW		Х	x >			6	00	4772	6.70	
111488	MW 102	23 feb 17	0936	GW		X	7/			E				
W489	MW105	23 Feb 17	1638	GW		\times	\times			6	,,68	स्टड्स	6,73	
W490	MW70	23 Feb17	1122	Gw		×	XX			Ť	7.80	3515	6.98	
WYGI	4280 R	23 feb17	1332	GW		×	XX	1 1		2	.68	5B52	7,12	MDU CCR List with TSS
W492	MW 3-90	23 feb 17	1520	Gw		X	λ			9	5,71	4850	6.86	and Dissolved CCR Metals.
WYG3	Mw 33	24 Feb 17	0927	GW		X	× ?	5		1.4	7.88	5234	6,53	
W494	Dupl	23 Feb17	_	Gw		X	××	-				-		
W49S	DupZ	53 2417	_	Gw		X	7 8							,
W496	FB2	2350617		w		X	7	<u> </u>						

Comments: well 104 was not sampled during this event because it is still under show cover.

Relinquished By:	Relinquished By:					
Name;	Date/Time	Location:	Temp (°C)			
1 M7 Ph	24 fe+17 1050	ر (og اصلے Walk In #2	Z.4 R.01 /M562/1 TM588			
2						

Received	d by:
/ Name:	Date/Time
(Ingel Simmeon	24FEB17 434 1050
U.	24F9990





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



CASE NARRATIVE – AMENDED 8 JUN 2017 (Radiochem Reports RL change)

MVTL Lab Reference No/SDG:

201782-0448

IML Lab Reference No/SDG:

S1702326

Client:

Montana Dakota Utilities

Location:

MDU Heskett Ash Site

Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W497 through 17-W506

IML Laboratory Identifications:

\$1702326-001 through \$1702326-010

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
MW101	17-W497	S1702326-001
MW102	17-W498	S1702326-002
MW105	17-W499	S1702326-003
MW70	17-W500	S1702326-004
MW80R	17-W501	S1702326-005
MW3-90	17-W502	S1702326-006
MW33	17-W503	S1702326-007
Dup1	17-W504	S1702326-008
Dup2	17-W505	S1702326-009
FB	17-W506	S1702326-010

I. RECEIPT

- All samples were received at the laboratory on 24 Feb 2017 at 1050.
- 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.
 - o Temperature of samples upon receipt was 10.4°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 Feb 2017.
 - o 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.



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



CASE NARRATIVE – AMENDED 8 JUN 2017 (Radiochem Reports RL change)

MVTL Lab Reference No/SDG:

201782-0448

IML Lab Reference No/SDG:

S1702326

Client:

Montana Dakota Utilities

Location:

MDU Heskett Ash Site

Project Identification:

CCR February 2017

MVTL Laboratory Identifications:

17-W497 through 17-W506

IML Laboratory Identifications:

\$1702326-001 through \$1702326-010

Page 2 of 2

III. METHODS

- Approved methodology was followed for all sample analyses.
 - o 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.
- 24 Apr 2017 Per email from Terri Olson at Barr, sample 17-W503 was amended to change the sample date to 24 Feb 2017.
- 19 May 2017 Per email from Terri Olson at Barr, samples MW3-90 and Dup1 were reanalyzed for radiochemistry. This resulted in a higher reporting limit for the analyses.
- 26 May 2017 Per email from Terri Olson at Barr, the radiochemistry reports were modified to include actual results on the rechecked samples versus ND. In addition, a QC was included in the data package.
- 8 Jun 2017 IML Laboratory was able to review their data results and lower the RL on their reports.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: DATE: 8 Jun 17

Claudette Carroll - MVTL Bismarck Laboratory Manager

From: Wade Nieuwsma [mailto:waden@imlinc.com]

Sent: Wednesday, June 07, 2017 4:57 PM **To:** Claudette Carroll ccarroll@mvtl.com

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Claudette

Attached is the correct data package.

We had enough sample to meet the 0.2 pCi/L RL

On 5/19 it was stated there may be an elevated RL depending on sample volume

Wade

From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Wednesday, June 07, 2017 3:27 PM

To: Wade Nieuwsma

Subject: FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Help me please. For data package S1702326, which is the correct data package with the correct RLs? Thank vou. ©

Claudette



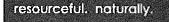
From: Terri A. Olson [mailto:TOlson@barr.com]
Sent: Wednesday, June 07, 2017 4:19 PM
To: Claudette Carroll <ccarroll@mvtl.com>

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Can you please confirm that they were able to reanalyze using enough sample volume to achieve the 0.2 pCi/L RL – since this was brought up previous to sending in the samples, it seems odd that it wasn't elevated. If this is the case, we should have it listed in the narrative since the 05/19 states there will be higher RLs.

Thank-you,

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





This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering

From:

Terri A. Olson <TOlson@barr.com>

Sent:

Thursday, June 01, 2017 3:54 PM

To:

Claudette Carroll

Subject:

FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Attachments:

201782-0448 Amended MDU HESK CCR FEB 17.pdf; MVTLS1702326-F-4.xls

Follow Up Flag:

Follow up

Flag Status:

Flagged

Hi Claudette,

Could you check the attached PDF – it looks like there are duplicates for some of the reports.

Thank-you,

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

TOlson@barr.com www.barr.com

resourceful, naturally.



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Friday, May 26, 2017 9:36 AM

To: Marshall, Samantha <Samantha.Marshall@mdu.com>

Cc: Tonia D. O'Brien <tobrien@barr.com>; Barr Data Management <BarrDM@barr.com>; Terri A. Olson

<TOlson@barr.com>

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Happy Friday everyone,

Attached is the amended data package from IML. Hard copies to follow to Sam.

Have a great weekend!

CLAUDETTE CARROLL

Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720

From:

Terri A. Olson <TOlson@barr.com>

Sent:

Wednesday, May 24, 2017 7:41 AM

To:

Claudette Carroll

Cc:

Tonia D. O'Brien; Barr Data Management; Marshall, Samantha

Subject:

RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Follow Up Flag:

Follow up

Flag Status:

Flagged

Hi Claudette,

Couple of items regarding this revised Rad Chem report.

- The results were reported with ND and NA instead of actual numbers as we have had done previously for this project.
- The reanalyzed results for Rad 226 have the RL at 1 instead of 0.2. Assumed that it was due to less volume used for the analysis but I don't remember that being an issue when we discussed reanalysis.
- Didn't see a QC sheet associated with the reanalyzed data.

Thank-you,

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

resourceful. naturally.



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Monday, May 22, 2017 8:35 AM

To: Terri A. Olson <TOlson@barr.com>; Tonia D. O'Brien <tobrien@barr.com>; Barr Data Management

<BarrDM@barr.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Good morning,

Attached are the recheck/reanalysis results for the Radiochem samples from MDU Heskett. Hard copies to follow to Sam.

Have a great week!

CLAUDETTE CARROLL

Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From: Terri A. Olson [mailto:TOlson@barr.com]

Sent: Tuesday, May 02, 2017 4:16 PM
To: Claudette Carroll ccarroll@mvtl.com

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Please have the lab reanalyze. Hopefully it will indicate which previous result was correct.

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



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Friday, April 28, 2017 1:12 PM To: Terri A. Olson < TOlson@barr.com >

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Terri,

IML said that they could reanalysis without any additional charge however the RL may be affected due to volume of remaining sample. How would you like to proceed?

Happy Friday

CLAUDETTE CARROLL Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From: Claudette Carroll

Sent: Thursday, April 27, 2017 8:07 AM

To: 'Terri A. Olson' <TOlson@barr.com>

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hello Terri,

I would have to check with IML. I would guess since they recounted them and the results did not change, that they would most likely charge for a reanalysis. Let me check with them and once I know, I will follow up with you.

CLAUDETTE CARROLL

Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501



From: Terri A. Olson [mailto:TOlson@barr.com]

Sent: Thursday, April 27, 2017 7:35 AM
To: Claudette Carroll <ccarroll@mvtl.com>

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Claudette,

Would there be an additional charge for reanalysis?

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

resourceful, naturally.

a/Arti

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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Monday, April 24, 2017 8:27 AM To: Terri A. Olson <TOlson@barr.com>

Subject: FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Terri,

The response from IML regarding the duplicate sample is below. Would you like to have the samples reanalyzed?

CLAUDETTE CARROLL

Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From: Wade Nieuwsma [mailto:waden@imlinc.com]

Sent: Tuesday, April 18, 2017 5:25 PM
To: Claudette Carroll ccarroll@mvtl.com

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Claudette

We recounted the samples in question with no change.

Do you need them reanalyzed?

Wade

From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Tuesday, April 18, 2017 10:54 AM

To: Wade Nieuwsma

Subject: FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Wade,

Could you amend report S1702326-007 to change the sample date from 2/23/17 to 2/24/17, please? Also, the consultant for this site also wanted to have you check on the results for S1702326-006. It is the duplicate of sample S1702326-008 and she believes that the values were significantly different.

Let me know what you find out.

Thanks!

CLAUDETTE CARROLL Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From:

Terri A. Olson <TOlson@barr.com>

Sent:

Tuesday, May 02, 2017 4:16 PM

To:

Claudette Carroll

Subject:

RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Please have the lab reanalyze. Hopefully it will indicate which previous result was correct.

Terri A. Olson Senior Data Quality Specialist Minneapolis, MN office: 952,842,3578 <u>TOlson@barr.com</u> www.barr.com

resourceful, naturally.



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

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Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

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Happy Friday!

CLAUDETTE CARROLL Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From: Claudette Carroll

Sent: Thursday, April 27, 2017 8:07 AM To: 'Terri A. Olson' < TOlson@barr.com >

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

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CLAUDETTE CARROLL
Minnesota Valley Testing Laboratories, Inc.
2616 E. Broadway Ave.
Bismarck, ND 58501
701-258-9720



From: Terri A. Olson [mailto:TOlson@barr.com]

Sent: Thursday, April 27, 2017 7:35 AM To: Claudette Carroll ccarroll@mvtl.com

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Claudette,

Would there be an additional charge for reanalysis?

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



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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Monday, April 24, 2017 8:27 AM To: Terri A. Olson < TOlson@barr.com>

Subject: FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Terri,

The response from IML regarding the duplicate sample is below. Would you like to have the samples reanalyzed?

CLAUDETTE CARROLL Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



From: Wade Nieuwsma [mailto:waden@imlinc.com]

Sent: Tuesday, April 18, 2017 5:25 PM
To: Claudette Carroll ccarroll@mvtl.com

Subject: RE: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Claudette

We recounted the samples in question with no change.

Do you need them reanalyzed?

Wade

From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Tuesday, April 18, 2017 10:54 AM

To: Wade Nieuwsma

Subject: FW: Emailing - MDU HESKETT FIELD LETTER FEB 17.pdf

Hi Wade,

Could you amend report S1702326-007 to change the sample date from 2/23/17 to 2/24/17, please? Also, the consultant for this site also wanted to have you check on the results for S1702326-006. It is the duplicate of sample S1702326-008 and she believes that the values were significantly different.

Let me know what you find out.

Thanks!

CLAUDETTE CARROLL Minnesota Valley Testing Laboratories, Inc. 2616 E. Broadway Ave. Bismarck, ND 58501 701-258-9720



MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890

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Samantha Marshall Montana Dakota Utilities

400 N. 4th

Bismarck ND 58501

Page: 1 of 1

Report Date: 22 Mar 17 Lab Number: 17-W497 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 13:11 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

Project Name: MDU Heskett Sample Description: MW101

Event and Year: Feb 2017

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.70	units	NA	SM 4500 H+ B	23 Feb 17 13:11	JSM
Temperature - Field	6.00	Degrees C	NA	SM 2550B	23 Feb 17 13:11	JSM
Conductivity - Field	4772	umhos/cm	1	EPA 120.1	23 Feb 17 13:11	JSM
Radium 226	See Atta	ached Report			20 Mar 17	OL
Radium 228	See Atta	ached Report			16 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite 27 Mar 17 K. Canto

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: θ = Due to sample matrix # = Due to cor ! = Due to sample quantity + = Due to int

= Due to concentration of other analytes
+ = Due to internal standard response



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Report Date: 22 Mar 17 Lab Number: 17-W498 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 9:36 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

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

Project Name: MDU Heskett Sample Description: MW102

Event and Year: Feb 2017

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	23 Feb 17	9:36	JSM
Temperature - Field	6.35	Degrees C	NA	SM 2550B	23 Feb 17	9:36	JSM
Conductivity - Field	9857	umhos/cm	1	EPA 120.1	23 Feb 17	9:36	JSM
Radium 226	See Atta	ached Report			20 Mar 17		OL
Radium 228	See Atta	ached Report			16 Mar 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto 27 MAr17

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 conduct to sample quantity + = Due to in

CERTIFICATION: ND # ND-00016

= Due to concentration of other analytes
+ = Due to internal standard response



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Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Report Date: 22 Mar 17 Lab Number: 17-W499 Work Order #:82-0448 Account #: 002800

Page:

Date Sampled: 23 Feb 17 16:38 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

1 of 1

Project Name: MDU Heskett Sample Description: MW105

Event and Year: Feb 2017

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.73	units	NA	SM 4500 H+ B	23 Feb 17 16:38	JSM
Temperature - Field	6.68	Degrees C	NA	SM 2550B	23 Feb 17 16:38	JSM
Conductivity - Field	8258	umhos/cm	1	EPA 120.1	23 Feb 17 16:38	JSM
Radium 226	See Atta	ached Report			20 Mar 17	OL
Radium 228	See Atta	ached Report			16 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte 27 Mc17 K. Canto

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



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

Project Name: MDU Heskett Sample Description: MW70

Event and Year: Feb 2017

Page: 1 of 1

Report Date: 22 Mar 17 Lab Number: 17-W500 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 11:22 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.98	units	NA	SM 4500 H+ B	23 Feb 17 11:22	JSM
Temperature - Field	7.80	Degrees C	NA	SM 2550B	23 Feb 17 11:22	JSM
Conductivity - Field	3515	umhos/cm	1	EPA 120.1	23 Feb 17 11:22	JSM
Radium 226	See Attac	hed Report			20 Mar 17	OL
Radium 228	See Attac	hed Report			16 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

27 Mari7 Clauditte K. Canto

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 conduct to sample quantity + = Due to into

CERTIFICATION: ND # ND-00016

= Due to concentration of other analytes
+ = Due to internal standard response



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Page: 1 of 1

Report Date: 22 Mar 17 Lab Number: 17-W501 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 13:32 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

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

Project Name: MDU Heskett Sample Description: MW80R

Event and Year: Feb 2017

	As Reces Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.12	units	NA	SM 4500 H+ B	23 Feb 17 13:32	JSM
Temperature - Field	5.68	Degrees C	NA	SM 2550B	23 Feb 17 13:32	JSM
Conductivity - Field	5852	umhos/cm	1	EPA 120.1	23 Feb 17 13:32	JSM
Radium 226	See Atta	ached Report			20 Mar 17	OL
Radium 228	See Atta	ached Report			16 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

27 MA/17 Clauditte K. Canto

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



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Amended 19 May 17 (Radiochem)

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

Project Name: MDU Heskett Sample Description: MW3-90

Event and Year: Feb 2017

Page: 1 of 1

Report Date: 22 Mar 17 Lab Number: 17-W502 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 15:28 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	23 Feb 17 15:28	JSM
Temperature - Field	5.71	Degrees C	NA	SM 2550B	23 Feb 17 15:28	JSM
Conductivity - Field	4850	umhos/cm	1	EPA 120.1	23 Feb 17 15:28	JSM
Radium 226	See Att	ached Report			9 May 17	OL
Radium 228	See Att	ached Report			16 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

K Cante 19 May 17 Clauditte

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 constant # = Due to interpretation # = Due to inter

= Due to concentration of other analytes
+ = Due to internal standard response



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Amended 18 Apr 17 (Sample Date)

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

Project Name: MDU Heskett Sample Description: MW33

Event and Year: Feb 2017

Report Date: 22 Mar 17 Lab Number: 17-W503 Work Order #:82-0448 Account #: 002800

Date Sampled: 24 Feb 17 9:27 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.53	units	NA	SM 4500 H+ B	23 Feb 17	9:27	JSM
Temperature - Field	7.88	Degrees C	NA	SM 2550B	23 Feb 17	9:27	JSM
Conductivity - Field	5234	umhos/cm	1	EPA 120.1	23 Feb 17	9:27	JSM
Radium 226	See Atta	ached Report			20 Mar 17		OL
Radium 228	See Atta	ached Report			16 Mar 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

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



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1 of 1

Amended 19 May 17 (Radiochem)

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

Project Name: MDU Heskett Sample Description: DUP 1

Event and Year: Feb 2017

Report Date: 22 Mar 17 Lab Number: 17-W504 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

As Received Method Method Date Analyst RT. Reference Analyzed Result. See Attached Report 9 May 17 OI. Radium 226 16 Mar 17 OL See Attached Report Radium 228

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

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 conduct to sample quantity + = Due to in

= Due to concentration of other analytes + = Due to internal standard response



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



Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett Sample Description: DUP 2

Event and Year: Feb 2017

Page: 1 of 1

Report Date: 22 Mar 17 Lab Number: 17-W505 Work Order #:82-0448 Account #: 002800

Date Sampled: 23 Feb 17 Date Received: 24 Feb 17 10:50

Sampled By: MVTL Field Services

Temp at Receipt: 10.4C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			20 Mar 17	OL
Radium 228	See Attached Report			17 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantle 27MA17

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 con
! = Due to sample quantity + = Due to int

= Due to concentration of other analytes
+ = Due to internal standard response



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Report Date: 22 Mar 17

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Lab Number: 17-W506 Work Order #:82-0448 Account #: 002800

Bismarck ND 58501

Date Sampled: 23 Feb 17

Date Received: 24 Feb 17 10:50 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB 2

Temp at Receipt: 10.4C

Event and Year: Feb 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			20 Mar 17	OL
Radium 228	See Attached Report			17 Mar 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantlo 27MR17

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

CERTIFICATION: ND # ND-00016

= Due to concentration of other analytes
+ = Due to internal standard response



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 5/25/2017

CLIENT:

MVTL Laboratories, Inc.

Project:

201782-0448

Lab Order:

S1702326

CASE NARRATIVE

Report ID: S1702326004

(Replaces S1702326003)

Samples 17-W497 MW101, 17-W498 MW102, 17-W499 MW105, 17-W500 MW70, 17-W501 MW80R, 17-W502 MW3-90, 17-W503 MW33, 17-W504 DUP1, 17-W505 DUP2, and 17-W506 FB2 were received on February 28, 2017.

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

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141

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

Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

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

Report S1702326002 replaces report S1702326001. The report limit was lowered for radium 226.

Report S1702326003 replaces report S1702326002. Samples S1702326-006 and S1702326-008 were reanalyzed.

Report S1702326004 replaces report S1702326003. There was a clerical error on the report format

Reviewed by: All



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID: ClientSample ID: 17-W497 MW101

S1702326-001

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 1:11:00 PM

DateReceived: 2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 919	MB
Radium 226 Precision (±)	0.1	pCl/L			SM 7500 Ra-B	03/20/2017 919	MB
Radium 228	-1.2	pCi/L		1	Ga-Tech	03/16/2017 152	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	03/16/2017 152	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID: ClientSample ID:

S1702326-002 17-W498 MW102

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 9:36:00 AM

DateReceived: 2/28/2017 12:27:00 PM

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	03/20/2017 919	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/20/2017 919	MB
Radium 228	1.4	pCi/L		1	Ga-Tech	03/16/2017 458	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	03/16/2017 458	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 10



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID: ClientSample ID: 17-W499 MW105

S1702326-003

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 4:38:00 PM

DateReceived: 2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 919	MB
Radium 226 Precision (±)	0.05	pCl/L			SM 7500 Ra-B	03/20/2017 919	MB
Radium 228	-1.9	pCi/L		1	Ga-Tech	03/16/2017 803	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	03/16/2017 803	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 10



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName: Lab ID:

201782-0448

ClientSample ID: 17-W500 MW70

S1702326-004

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 11:22:00 AM

DateReceived:

2/28/2017 12:27:00 PM

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	03/20/2017 919	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/20/2017 919	MB
Radium 228	6.0	pCi/L		1	Ga-Tech	03/16/2017 1107	MB
Radium 228 Precision (±)	1.2	pCi/L			Ga-Tech	03/16/2017 1107	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions o

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID:

S1702326-005 ClientSample ID: 17-W501 MW80R

COC:

201782-0448

Date Reported

5/25/2017

Report ID

\$1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 1:32:00 PM

DateReceived: 2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL.	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.02	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	0.03	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	0.9	pCi/L		1	Ga-Tech	03/16/2017 1411	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/16/2017 1411	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID:

S1702326-006 ClientSample ID: 17-W502 MW3-90

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017 3:28:00 PM

DateReceived:

2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Dediencellder Tearl							
Radionuclides - Total Radium 226	0,1	pCi/L		0.2	SM 7500 Ra-B	05/09/2017 1452	МВ
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	05/09/2017 1452	MB
Radium 228	-1.4	pCi/L		1	Ga-Tech	03/16/2017 1715	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/16/2017 1715	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Е

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName: Lab ID:

201782-0448

ClientSample ID: 17-W503 MW33

S1702326-007

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/24/2017 9:27:00 AM

DateReceived:

2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total		 					
Radium 226	0.15	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	0.3	pCi/L		1	Ga-Tech	03/16/2017 2020	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/16/2017 2020	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory ND

Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits **RL** - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID:

S1702326-008 ClientSample ID: 17-W504 DUP1

COC:

201782-0448

Date Reported

5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017

DateReceived: 2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.01	pCi/L		0.2	SM 7500 Ra-B	05/09/2017 1452	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	05/09/2017 1452	MB
Radium 228	-1.5	pCi/L		1	Ga-Tech	03/16/2017 2325	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	03/16/2017 2325	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

С Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName: Lab ID:

201782-0448

ClientSample ID: 17-W505 DUP2

S1702326-009

COC:

201782-0448

Date Reported 5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017

DateReceived: 2/28/2017 12:27:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.8	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	1.8	pCi/L		1	Ga-Tech	03/17/2017 230	MB
Radium 228 Precision (±)	1.3	pCi/L			Ga-Tech	03/17/2017 230	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L ND

Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 9 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201782-0448

Lab ID: ClientSample ID: 17-W506 FB2

S1702326-010

COC:

201782-0448

Date Reported 5/25/2017

Report ID

S1702326004

(Replaces S1702326003)

WorkOrder:

S1702326

CollectionDate: 2/23/2017

FieldSampler:

DateReceived: 2/28/2017 12:27:00 PM

Matrix:

Water

Commonte

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total							
Radium 226	-0.01	pCi/L		0.2	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	0.03	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	03/17/2017 535	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	03/17/2017 535	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

С Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

0 X Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 of 10



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

Project:

MVTL Laboratories, Inc.

Date: 5/25/2017

Work Order:

S1702326 201782-0448

Report ID: S1702326004

(Replaces S1702326003)

Radiun	n 228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L			
	MB-422 (03/14/17 16:01)	RunNo: 143940	Prepl	Date: 03/0	8/17 12:00	Bato	hID 12935	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
_	Total Radium 228	ND	1				- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	
Radiun	n 228 by Ga/Tech	Sample Type LCS		Units	: pCi/L			
	LCS-422 (03/14/17 19:05)	RunNo: 143940	Prepl	Date: 03/0	8/17 12:00	Bato	hID 12935	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	. Qual
_	Total Radium 228	36	1	40.1		89.7	65.9 - 132	
Radiun	n 228 by Ga/Tech	Sample Type MS		Units	: pCi/L			
	MS-422 (03/15/17 01:15)	RunNo: 143940	Prepl	Date: 03/0	8/17 12:00	Bato	hID 12935	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
-	Total Radium 228	37	1	40.1	ND	93.0	65.9 - 132	
Radium	228 by Ga/Tech	Sample Type MSD		Units	: pCi/L			
Γ	MSD-422 (03/15/17 04:20)	RunNo: 143940	Prepl	Date: 03/0	8/17 12:00	Bato	hID 12935	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
_	Total Radium 228	43	1	37	13.5	106	20	

Qualifiers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Matrix Effect

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Outside the Range of Dilutions 0

Spike Recovery outside accepted recovery limits



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Laboratories, Inc.

Date: 5/25/2017

Work Order:

S1702326

Report ID: S1702326004

Project:

201782-0448

(Replaces S1702326003)

Radiu	um 226 in Water -	Sample Type MBLK		Units:	pCi/L			
	MB-1726 (03/20/17 09:18)	RunNo: 143948	Prep	Date: 03/1	3/17 0:00	Bato	chiD 12943	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	ND	0.2					
	MB-1747 (05/09/17 14:52)	RunNo: 145696	Prep	Date: 05/03	3/17 0:00	Bato	hID 13144	
	Analyle	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	ND	0.2					
Radiu	ım 226 in Water -	Sample Type LCS		Units:	pCi/L			
	LCS-1726 (03/20/17 09:18)	RunNo: 143948	Prep	Date: 03/13	3/17 0:00	Bato	hID 12943	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	5.7	0.2	5.89		96.2	67.1 - 122	
	LCS-1747 (05/09/17 14:52)	RunNo: 145696	Prep	Date: 05/03	3/17 0:00	Bato	chID 13144	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	5.9	0.2	6.41		91.2	67.1 - 122	
Radiu	rm 226 in Water -	Sample Type LCSD		Units:	pCi/L			
	LCSD-1726 (03/20/17 09:18)	RunNo: 143948	Prep	Date: 03/13	3/17 0:00	Bato	hID 12943	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226	6.4	0.2	5.7	12.3	109	20	
	LCSD-1747 (05/09/17 14:52)	RunNo: 145696	Prepi	Date: 05/03	3/17 0:00	Bato	hID 13144	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226	6.0	0.2	5.9	1.78	92.9	20	
Radiu	ım 226 in Water -	Sample Type MS		Units:	pCi/L			
	S1702301-006AMS (03/20/17 09:19)	RunNo: 143948	Prepl	Date: 03/13	3/17 0:00	Bato	hID 12943	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	11.8	0.2	11.8	0.5	95.9	65 - 131	
	S1704322-006AMS (05/09/17 14:52)	RunNo: 145696	Prepl	Date: 05/03	3/17 0:00	Bato	hID 13144	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	D E 000	6,2	0.2	6.41	ND	96.8	65 - 131	
	Radium 226	0,2	0.2	0.41	ND	50,0	00 - 101	

Qualifiers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

K Matrix Effect

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



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

Chain of Custody Record

P	age	9	1	of	1	

Toll Eron: (8	Phone: (701) 2 00) 279-6885									2	01782-0448		
Company Name		Fax: (701) 258-9724		Account #	:						Pho	one #:	
-											701-258-9720		
		<u>VTL</u>		Contact: F							Fax	: #:	
	<u>2616 E E</u>			Claud	ette	}					For faxed report check box		
Dilli A.I.I.		c, ND 58501		Name of S	ampler:						E-	mail: ccarroll@mvtl.com	
Billing Address	(indicate if different	trom above):		Ostada Nisa							D-4	For e-mail report check box	
	DO D		Quote Nur	nber						Dat	e Submitted: 24-Feb-17		
		30x 249 , MN 56073		Project Na	ma/Numha						Pin	chase Order #:	
	New Onn	, MIN 00070		i Toject Na	iiie/ivaiiibe	51.					, ui	BL5802	
		Sample Information					В	ottle	Туј	ре		Analysis	
S17023	3ZĻ		Sample	Date	Time	Untreated	ml HNO3	VOC Vials Umpreserved	s Jar	J.			
Number	MVTL Lab Number	Client Sample ID	Type	Sampled	{	Untr	1000	100 H	Glass	Other		Analysis Required	
001	17-W497	MW101	GW	23-Feb-17	1311		4					Ra226 & Ra228	
002	17-W498	MW102	GW	23-Feb-17	936		4					Ra226 & Ra228	
003	17-W499	MW105	GW	23-Feb-17	1638		4					Ra226 & Ra228	
204	17-W500	MW70	GW	23-Feb-17	1122		4					Ra226 & Ra228	
005	17-W501	MW80R	GW	23-Feb-17	1332		4					Ra226 & Ra228	
006	17-VV502	MW3-90	GW	23-Feb-17	1528		4		ļ		ļ	Ra226 & Ra228	
007	17-W503	MW33	GW	24-Feb-17	927		4				ļ	Ra226 & Ra228	
00 9	17-W504	DUP1	GW	23-Feb-17		ļ	4					Ra226 & Ra228	
009		DUDO	0141	22 Fab 17		1	4					Ra226 & Ra228	
001	17-W505	DUP2	GW	23-Feb-17		ļ	14	ļ		-	+	Traceo a traceo	
010	17-W506	FB2 orted as a numerical valu	GW	23-Feb-17 23-Feb-17			4					Ra226 & Ra228	

3 coolers

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
A. Simonson	24-Feb-17	1700		Kathy Boyo	2.29.H	12:27	1.3
2.							2,3



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	MW101
Sampling Personal:	lo remode

Phone: (701) 258-9720

Weather Conditions:		Temp:	35	°E	Minds	NOS-10							
				I"	Wind:	1003-10			Precip	: Sun	ny / Partly (Cloudy / Clo	udy>
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(NO)				Purging Met	hod:	Blad				ntrol Setting	
Well Labeled?	Yes	No				Sampling Met		Blad			Purge:	on Columnia	
Casing Straight?	Xes	No				Dedicated Equ		(Yes)	-(No	1		51	sec.
Grout Seal Intact?	(es)	No	Not V	isible		Duplicate Sample		Yes	(No)	_	Recover:	40	sec.
Repairs Necessary:						Duplicate Sample		103	CINO	-	PSI:		
Casing	Diameter:	***************************************	2''	***************************************		Duplicate Gample	5 ID.			_	Pumping R	ate: ィロン	mL/min
Water Level Befo	ore Purge:	36	,90	ft		Purge D)ato:	23 feb/3	7.	Time Bura	ing Began:	17 1/	
	ell Depth:	~										12/6	am/pm
	······	· · · · · · · · · · · · · · · · · · ·		11		Well Purged [Jry?	Yes	(No)	l ime F	urged Dry:	-	am/pm
	II Volume:	-		liters		Sample D	ate:	23 feb/=	}	Time of	Sampling:	1311	am/pm
Depth to Top	of Pump:	Carrier Constitution	- prompter	ft									The state of the s
Water Level Afte	r Sample:	.5	10,55	ft		Bottle	CC	R· 11 Raw	500ml Nit	irc 500ml l	Nitria (filtara	d), 4-1L Nitri	
		Vater Level	Indicator		List:		rt. ILITAW,	JOOINE IVI	ire, soonie i	Milic (ilitere	u), 4-1L Nitri	С	
				P** 5 - 7 - 5 -		_							***************************************

Field Measurements

					· / · · · · · · · · · · · · · · · · · ·					
Stabili:		Temp (°C)	Spec. Cond.	рH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1221	6.60	4820	6.01	3.09	59,2	99.6	37.92	500	Clear
2	1226	6.70	4800	6,77	2,07	41.1	59,9	38,29		Clear
3	1231	6.21	4826	6,77	1,84	35,0	41,9	38,52	500	Ela
4	1236	6.80	4816	6.75	1.62	31.1	30,2	38,80	500	Clear
5	1246	6.30	4799	6,73	1166	31,3	3-1-3163		1600	Clear
6	125%	6.31	4772	6,73	1,46	32.5	14.9	39,30	580	Clear
7	1256	68.3	4767	6,74	1,50	32.6	10.6	39.41	500	Clear
8	1301	6,23	4 784	6,76	1,54	33,9	8,23	39,45	500	Clear
9	1306	6,03	4804	6140	1,72	37,0	7,22	39.46	500	Clear
10	1311	6,00	4 77-2	10,70	1179	39,4	7.33	39,48	500	Clear
tabilized:	(Y)\$	No					tal Volume			mL .

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	MW 102
Sampling Personal:	Jan Hin

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

Weather Conditions:		Temp:	35	°F	Wind:	NOS	-10		Precip	· Cun	mir / Dowley (1 2015	
	Well Info	rmation			······································	Sampling Information							ngh >
Well Locked?		NO)											
						Purg	ing Method:	Blac	der		Co	ntrol Setting	<u> </u>
Well Labeled?		No				Sampl	ng Method:	Blac	ider		Purge:		
Casing Straight?		No		ļ		Dedica	ted Equip?:		No			55	sec
Grout Seal Intact?	Yeş	No	Not Vi	sible			Sample?:	Yes			Recover:		sec.
Repairs Necessary:									N6>		PSI:	<u> 50</u>	***************************************
Casing	Diameter:		2"			Duplicate	Sample ID:	<u> </u>	THE PERSON NAMED OF THE PE	Parameter,	Pumping R	ate: / 0ට	mL/min
Water Level Befo		Ni_											
			,64	ft		F	ourge Date:	23 Feb/	7	Time Purg	ing Began:	0901	@m/pm
	Vell Depth:			ft		Well P	urged Dry?	Yes	No		urged Dry:		
We	Il Volume:	*************************************	-	liters			mple Date:	23 Feb 1			f Sampling:		am/pm
Depth to Top	of Pump:	C	-	ft		-	mple Date.	<u> </u>	7	Time 0	Sampling:	0936	am/pm
Water Level Afte		1Ci	794K										
			Bottle CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric					С					
Measurement Method: Electric Water Level Indicator				List:									

Field Measurements

		1		1		mododic	711101110			
	zation ecutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0906	6.07	9685	6.84	2.88	1.8	40.1	17,30	500	Clear
2	0911	6.20	9898	6.88	1.98	~23,3	35.1	17,48	500	Cler
3	0916	6.35	9910	6.86	1,78	-29.1	13.2	17.77	500	Clear
4	0921	6.47	7842	6.85	1,75	-29,9	9.69	17,91	500	Clear
5	0126	6.13	9948	6,90	1.05	-32,5	799	17.92	500	
6	0931	6.43	9900	6.911		-35,3	7,80	18,06	500	dear
7	0936	6.35	9857	6.86	1.86	-32.8	7,75	18:11		Clear
8							7,53	10111	SUD	Clea
9										
10										
tabilized: omments:	(Yes	No			1	To	tal Volume	Removed:	3500	mL

Comments:



Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	***************************************
Sample ID:	mu 105	

2616 E. Broadway Ave, Bisn	narck, ND							oample ib.	7116	105		
Phone: (701) 258-97	20							Sampling Personal:	Darren	Nesin	-2h	
Weather Conditions:		Temp:	300	F	Wind:	NEI	<u> </u>					
٧	Vell Info	rmation				y v and j.	<u> </u>	Precip		y / Partly Cl	oudy// Clou	ıdy)
Well Locked?	Yes	No)						Sampling	Informatio	വ		
Well Labeled?						Purgir	ng Method:	Bladder		Con	trol Settings	3
	_{Yes>	No				Samplir	ng Method:	Bladder	7	Purge:	<u> </u>	
Casing Straight?	Yes	No				Dedicati	ed Equip?:	Yes No	† F	Recover:		sec.
Grout Seal Intact?	∦Yes.>	No	Not Vis	sible			Sample?:	Yes (No)	┤		->/-	sec.
Repairs Necessary:	"Anthon the supplement					Duplicate S			┦ ├_	PSI:	*******	
Casing D	iameter:		2"			- Dupiloute C	sample 1D.		<u> </u>	oumping Rat	te: /0 ਨ	mL/min
Water Level Befor	e Purge:	1	2,21	ft		<u> </u>		77-	T			
Total We							urge Date:	23 Feb (7	Time Purgin		1525	am/pm
	Volume:		- Company of the Comp	111			irged Dry?			rged Dry:	The same of the sa	am/pm
Depth to Top of			100	liters		Sar	mple Date:	23Feb17	Time of S	ampling:	1638	am/pm
Water Level After			1000									
			151	ft		Bottle	CC	R: 1L Raw, 500mL Nit	tirc. 500mL Ni	tric (filtered	4-11 Nitrie	`
Measurement I	Method:	Electric V	Vater L'evel in	idicator		List:				(i i i i i i i i i i i i i i i i i i i	
					•	·		······································				
				Field Me	asure	ments						

1		1		1	1	T				
	lization	Temp	Spec.		, DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	·
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%		Removed	Clarity, Color, Odor, Ect.
1	1033	6.33	27/1		22070		±1076	0.25 ft		clear, slightly turbid, turbid
<u> </u>	1533	5177	166	6,76	1.85	229,6	12.3	12.56	500	Char
2	1538	480	7845	6,74	1,45	221.5	9,60	12,45	500	- Caracterization of the Control of
3	1548	6.85	8008	6.74	1,22	2133	12,1	14.47	1000	C.
4	1608	6.69	8188	6.13	1117	204.9	15.7	12,45	2000	-0
5	1538	6,71	5-253	6,73	1.15	201,3	9.32	12.45	2000	dr-
6	1633	6,74	(X) (A)	6-13	112		9,42			de
7	1638	6.68	0270	6.73	11/2			12,45	500	Clero
8	1 0 2 1	90100	(2C)	<u> 5.72</u>	1,16	19805	945	1245	500	(Cin
9									-	
10	5									
Stabilized: Comments	1 1	No				To	tal Volume	Removed:	7000	mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	May 70.
Sampling Personal:	Jerry Many

Phone: (701) 258-9720

Weather Conditions:		Temp:	₹<	°F	\\/imal	XIOC D				
***************************************		· · · · · · · · · · · · · · · · · · ·		F	Wind:	N85-10	Precip	: Sunny / Partly (Cloudy / Cla	oudy >
	Well Info	rmation					Sampling I			
Well Locked?	Yes	(No)				Purging Method:		T T	ontrol Setting	~~
Well Labeled?	(Yes)	No				Sampling Method:	Bladder		T	
Casing Straight?	(es)	No				Dedicated Equip?:		Purge:	- cher /	sec.
Grout Seal Intact?	Yes	No	No	t Visible		Duplicate Sample?:		Recover:		sec.
Repairs Necessary:						Duplicate Sample ID:	Yes (No	PSI:	<u> </u>	1 / *
Casing	Diameter:	1000	2"			Dapinoaco Gampie IB.		Pumping R	Rate: /40	m∐min
Water Level Befo	ore Purge:	19	,34	ft		Purge Date:	23 feb 17	Time Purging Began:	1047	am/pm
Total W	ell Depth:			ft		Well Purged Dry?	Yes (No	Time Purged Dry:		
We	ll Volume:	سيک		liters		Sample Date:		Time of Sampling:		am/pm
Depth to Top	of Pump:	Consti	-	fi		Complete Sate.	031001	Time or camping.	1122	am/pm
Water Level Afte		2	2.60	ft		Bottle CC	P: 11 Paw 500ml Nit	irc, 500mL Nitric (filtere	-D 4 41 NO	•
Measurement Method: Elec		Electric V	Vater Lev	el Indicator		List:	or. IE Naw, Journe Mil	ire, Soome Nitre (intere	:0), 4-1L NI	ric
				P	n s					

Field Measurements

				7						
Stabili:		Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1052	733	3941	6.99	1.41	133,1	0.87	21.08	500	Clear
2	1057	7.25	3906	6.95	1119	13 1.1	0.35	21.39	SOO	Clear
3	1102	7.10	3887	6,96	1,24	124,9	0,30	21,55	500	Clear
4	1107	7.56	3 828	6,97	1.02	121.7	0.40	21.60	≤co	Clear
5	1112	7.59	3717	6,98	0,99	117.1	0.32	22,00	500	Clear
6	1117	7.54	3653	6.98	0.98	114.5	0.27	22.16	500	Clear
7	1122	7.00	3515	6,98	0.97	113.0	0,41	22,24	500	Clear
8							- 1 (1			- 102
9										
10										
tabilized:	(Yes)	No	-	I,u,u,u,		To	tal Volume	Removed:	35 <i>0</i> 0	mL

Comments:



Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	MWROR	
Sampling Per	sonal: A a Aca A Care	

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

Phone: (701) 258-9	720						•	ournphing i	Craurial.	1.0 2 26	11/11/10 1E	Sinoacy	**
Weather Conditions:		Temp:	32-°F		Wind:	NEW	<u> </u>		Precip:	Suni	ay / Partly C	loudy / Clo	55
	Well Info	rmation	•					Sa	mpling In			noddy a Cio	auy
Well Locked?	Yes	No				Purgis	ng Method:	Blad		Offinatio			
Well Labeled?	Yes	No					ng Method:	Blad			J.	ntrol Setting	<u>s</u>
Casing Straight?	Xes .	No					ed Equip?:	Biau ⊈es			Purge:	<u> </u>	sec
Grout Seal Intact?		No	Not Visi	ble			Sample?:	⊥es ¥es	No		Recover:	57	sec
Repairs Necessary:							Sample ID:		No ~ Z		PSI:	- (0-	
Casing	Diameter:		2"			Dupilicate	oample ID.	// <i>UIP</i>			Pumping Ra	ate: <u>/ (/ () ()</u>	mL/mir
Water Level Befo	ore Purge:		14,27	ft		P	urge Date:	2-3 Fub,	, -2 T	imo Dura	ing Began:	120-	····
Total W	/ell Depth:			fi			urged Dry?	Yes				1307	am/pm
We	Il Volume:	~		liters			mple Date:		(NO)		urged Dry:	1320	am/pm
Depth to Top	of Pump:	1	9,30	ft		Jai	imple Date.	637-491	7	Tiffle Of	Sampling:	1332	am/pm
Water Level Afte			4.54			Bottle	00	D. 41 D	5001 NIII				
Measuremen			Water Level Ind	licator		List:		K. IL Raw,	500mL Nitiro	, 500mL (Nitric (filtered	d), 4-1L Nitri	<u>c</u>
,,,	·······								**************************************	- 		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·

Field Measurements

	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1312	6.89	5837	7.08	2.07	236.1	4.37	14.48	500	
2	1317	5.82	5849	7.10	1,25	232,2	4.48	14,50	500	Clear
3	1322	5.63	5841	7al/	1.03	230.6	2,04	14,50	500	Clear
4	1327	5,59	5854	7012	1,01	229,1	2,98	14,50	500	Clean
5	1332	5.68	5852	7,12	0.99	228,0	3,12	14.50	500	Clen
6										
7										
8										
9										
10										
Stabilized:	Yes	No				T.	tal Volume	Domosed	2000	an I

Comments:

Total Volume Removed: 250/V mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	3-90
Sampling Personal:	10.4

Phone: (701) 258-9720

Weather Conditions:		Temp:	30 %	=	Wind:	と め く -	10		Precip:	Sun	ny / Partly C	loudy / Clo	udy
V	Vell Info	rmation						Sai	mpling l	nformatio	on		
Well Locked?	Yes	(No				Purgin	g Method:	Blade	der		Co	ntrol Settino	ıs
Well Labeled?	(Les	No				Samplin	g Method:	Blade	der		Purge:	4	sec.
Casing Straight?	Yes >	No				Dedicate	ed Equip?:	(Pes)	No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	Sample?:	YÊS	No		PSI:	20	
Repairs Necessary:						Duplicate S	Sample ID:	Dup/	******		Pumping R	ate: / 00	mL/min
Casing [Diameter:		2"							•	· · · · · · · · · · · · · · · · · · ·	······································	
Water Level Before	re Purge:	[(0.05	ft		Р	urge Date:	284617	-	Time Purg	ing Began:	/S03	am/pm
Total We	ell Depth:	· ·		ft		Well Pu	rged Dry?	Yes	(NO)	Time F	urged Dry:	~	am/pm
Weil	Volume:			liters		Sar	nple Date:	234666	7-	Time o	Sampling:	1528	am/pm
Depth to Top	of Pump:	Came		ft				*	7	·			
Water Level After	Sample:	Ì	0.20	ft		Bottle	CC	CR: 1L Raw,	500mL Niti	irc. 500mL	Nitric (filtere	d). 4-1L Nitr	ic
Measurement	Method:	Electric W	ater Level Ir	dicator		List:				······································			
									·····				

Field Measurements

	izatìon secutive)	Temp (°C)	Spec. Cond.	рH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	ISOB	5.74	4888	6.81	2.02	-114.2	1173	16.20	నో ⁶ 6	Clear
2	1513	5,68	4844	6,82	1,66	-122,0	1.45	16.18	500	Elean
3	1518	5.67	4856	6.84	1,64	-129.7	1.08	16.15	ري وع	ilea
- 4	1523	5,69	4850	6.05	1162	-132.9	0,84	16,14	S60	Elisy
5	(528	5.71	4850	6,86	1.62	-132.0	0.79	16,13	500	Clear
6										
7										
8					1,334					AV
9										
10	Xes									



Groundwater Assessment

Company:	MDU Hesket	t
Event:	2017	
Sample ID:	MW 33	
Sampling Por	reanal: Da sacar	1/1-1

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

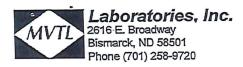
							_						
Weather Conditions:		Temp:	<u>)</u>		Wind:	L196	- A Francisco		Precip	: Sun		Cloudy / Clo	udy
	Well Info	rmation				7		Sa	mpling	Informati	ón		
Well Locked?	Yes2-	(No)				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	∛es>	No				Sampli	ng Method:	Blac	lder		Purge:		sec.
Casing Straight?	Yes '	No	Can Like mensedir			Dedicat	ted Equip?:	(Yes)	No		Recover:	40	sec.
Grout Seal Intact?	Yes	No	(Not Visi	ble		Duplicate	Sample?:	Yes	No)		PSI:	d town	-
Repairs Necessary:						Duplicate	Sample ID:	And the second second	years a married of parties		Pumping R	ate: 7077	mL/min
Casing	Diameter:		2"								·		
Water Level Bef	ore Purge:		41.26	ft		F	Purge Date:	248	617	Time Purg	ging Began:	A 877	_ám/pm
Total W	Vell Depth:		No. of Schoolse.	ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:	- Caretanana de la careta de la	-am/pm
We	ell Volume:		**************************************	liters		Sa	mple Date:	2450	617	Time o	f Sampling:	6925	7 am/pm
Depth to Top	of Pump:	ا سرخ	14.50	ft						,		······································	
Water Level After	er Sample:	447	*	ft		Bottle	CC	R: 1L Raw,	500mL Ni	tirc, 500mL	Nitric (filtere	d), 4-1L Nitri	c
Measuremen	t Method:	Electric \	Vater Level Ind	licator		List:					- I - Maria - I - I - I - I - I - I - I - I - I -		
				Field	Measure	ements						All the second s	

Stabili	zation ecutive)	Temp (°C)	Spec. Cond.	Нq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Removed	clear, slightly turbid, turbid
1	J837	6,49	5652	6.67	3,05	-13.6	48.1	41,49	500	Slightly Twsix
2	0842	7,29	\$496	1.53	1,52	219,6	97.1	41.58	520	37
3 (1/07		7.64	5290	6,54	1.733	函2,3	15.	41,58	2000	Clear-
4-16-31	0912	788	5248	6053	1.69	2.6	4.25	41.63	1000	Company manager
5	0917	7,61	5243	6,53	1125	29	2,22	41,54	500	C. C. Z.
6	0922	F.00	5229	6.53	1169	1,2	2.48	41.67	500	for the Landson
7	h927	7.88	5234	633	1,65	5.9	2,03	41.43	さつと	En Garage Constitution of the Constitution of
8								, , , , , ,	1	
9										
10	(S.									

Stabilized: Yes No Comments:

Total Volume Removed: らてので mL

124 Feb 17



Chain of Custody Record

Project Name	:		Event:			***************************************	1	Work C	rder N	lumber:	3414	50	- 82 - 0448
	MDU Heskett			F	eb 2017	ñ				_	Solo	048	100 0776
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon Co Attn: Address:	руз						ipler(s): 1 Hey n Ni	er es wade)	
	Samp	le Informatio	n			Е	3ott	le Тур	9	Fi	eld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type		1 Iller Niluto				Temp (°C)		Hd	Analysis Required
repw	4w i01	23/24/7	1311	GW		4				6.00	4772	670	
W408	MW102	235417	0936	6W		4				6.35	9857	6.86	
W499	MW10S	23 Fpb 17	1638	سى		4				6.68	B256	6.73	ef
1 mises K		35日	1122	Cw		4				7.80	3515	6,98	
W501	MWBOR	23 Feb 17	B32	GW		4				5.68	2825	712	Rad 226 & Rad 228
W502	MW 3-90	235617	is28	Gw		4				5.71	4850	6,86	
WEOS	MW 33	248417	0927	GW		4				7.88	5234	6.53	1
W504	Dep 1	2256617	-	GW		4				-	~	_	_
W505	Dup 2	23:417	_	Gu		4				_	_	_	_
10501	563	Z38e617	_	i))		141					_	_	

Comments:

Relinquished By:		Sam	ple Condition:
Name:	Date/Time	Location:	Temp (°C)
1 786-	1050	Walk In #2	10.4 ALL-H 2007 / 10588
2			

Received	i by:
Name:	Date/Time
11:0- 05-	ZUFEBI)
MONONOR	1:050
0	



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



CASE NARRATIVE – AMENDED 26 MAY 2016

(Dissolved selenium qualifier narration removed, dissolved selenium msd spike recovery narrated)

MVTL Lab Reference No/SDG:

201682-0831

Client:

Montana Dakota Utilities

Location:

MDU Heskett Ash Site

Project Identification:

CCR 2nd Quarter 2016 Groundwater

MVTL Laboratory Identifications:

16-W648 through 16-W652

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
Dup1	16-W648
Field Blank (FB)	16-W649
MW13	16-W650
MW103	16-W651
MW44R	16-W652

I. RECEIPT

- All samples were received at the laboratory on 7 April 2016 at 0800.
- 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.
 - o Temperature of samples upon receipt was 6.4°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.



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



CASE NARRATIVE – AMENDED 26 MAY 2016

(Dissolved selenium qualifier narration removed, dissolved selenium msd spike recovery narrated)

MVTL Lab Reference No/SDG:

201682-0831

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

Project Identification:

CCR 2nd Quarter 2016 Groundwater

MVTL Laboratory Identifications:

16-W648 through 16-W652

Page 2 of 2

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.
 - o For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
 - One dissolved selenium matrix spike duplicate recovery was outside the acceptable limits. The matrix spike recovery was within limits and the RPD for the matrix spike and matrix spike duplicate samples was also within limits. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudatte

ury

DATE: 26 May 16

Claudette Carroll - MVTL Bismarck Laboratory Manager

MVTL

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
Lab IDs: 16-W648 to 16-W652

Project: CCR Groundwater/2nd Otr 2016

Page: 1 of 4

Lab IDs: 16-W648 to 16-W										Work Order: 201682-0831								
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	105	80-120	0.100 0.100	16-W599QC 16-W702QC	0.0043 < 0.001	0.1054 0.1043	101 104	75-125 75-125	0.1054 0.1043	0.1104 0.1096	106 110	4.6 5.0	20 20	-	-	< 0.001	
Antimony - Total mg/l	0.1000	108	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.001 < 0.001 < 0.001	0.4002 0.4194 0.1066	100 105 107	75-125 75-125 75-125	0.4002 0.4194 0.1066	0.4102 0.4202 0.1066	103 105 107	2.5 0.2 0.0	20 20 20	-	-	< 0.001	
Arsenic - Dissolved mg/l	0.1000	107	80-120	0.100 0.100	16-W599QC 16-W702QC	0.0040 < 0.002	0.1087 0.1138	105 114	75-125 75-125	0.1087 0.1138	0.1108 0.1114	107 111	1.9 2.1	20 20	-	-	< 0.002	
Arsenic - Total mg/l	0.1000	109	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.002 < 0.002 < 0.002	0.4506 0.4412 0.1088	113 110 109	75-125 75-125 75-125	0.4506 0.4412 0.1088	0.4266 0.4262 0.1079	107 107 108	5.5 3.5 0.8	20 20 20	-		< 0.002	
Barium - Dissolved mg/l	0.1000	110	80-120	0.100 0.100	16-W599QC 16-W702QC	0.0220 0.0315	0.1270 0.1322	105 101	75-125 75-125	0.1270 0.1322	0.1325 0.1338	110 102	4.2 1.2	20 20	-	-	< 0.002	
Barium - Total mg/l	0.1000	107	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.002 0.0084 0.0896	0.4194 0.4506 0.1922	105 111 103	75-125 75-125 75-125	0.4194 0.4506 0.1922	0.3958 0.4534 0.1938	99 111 104	5.8 0.6 0.8	20 20 20	-	-	< 0.002	
Beryllium - Dissolved mg/l	0.1000	112	80-120	0.100 0.100	16-W599 16-W702QC	< 0.001 < 0.001	0.1041 0.1064	104 106	75-125 75-125	0.1041 0.1064	0.1084 0.1062	108 106	4.0	20 20	-	-	< 0.0005	
Beryllium - Total mg/l	0.1000	103	80-120	0.400 0.400	16-W639 16-W648	< 0.001 < 0.001	0.4100 0.4228	102 106	75-125 75-125	0.4100 0.4228	0.3964 0.4230	99 106	3.4	20 20	-	-	< 0.0005	
Boron - Dissolved mg/l	0.40	100	85-115	0.300	16-W639	1.76	1.99	77	75-125	1.99	2.00	80	0.5	20	-	-	< 0.1 < 0.1	
Boron - Total mg/l	0.40 0.40	100 100	80-120 80-120	0.400 0.400 0.600 0.600	16-W592 16-W639 16-W648 16-W680	0.18 1.76 0.44 0.39	0.58 2.19 1.03 0.96	100 108 98 95	75-125 75-125 75-125 75-125	0.58 2.19 1.03 0.96	0.58 2.14 1.02 0.97	100 95 97 97	0.0 2.3 1.0 1.0	20 20 20 20 20		-	< 0.1 < 0.1 < 0.1 < 0.1	
Cadmium - Dissolved mg/l	0.1000	108	80-120	0.100 0.100	16-W599QC 16-W702QC	< 0.0005 < 0.0005	0.1036 0.1070	104 107	75-125 75-125	0.1036 0.1070	0.1099 0.1112	110 111	5.9 3.8	20 20	-	-	< 0.0005	

MVTL

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Lab IDs: 16-W648 to 16-W	7652	P	Project: CCR Groundwater/2nd Qtr 2016 Work									ork Order: 201682-0831					
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/	Known Rec	Known % Rec Limits	Method Blank
Cadmium - Total mg/l	0.1000	110	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.0005 < 0.0005 0.0010	0.4022 0.4218 0.1092	101 105 108	75-125 75-125 75-125	0.4022 0.4218 0.1092	0.4244 0.4298 0.1106	106 107 110	5.4 1.9 1.3	20 20 20 20	-	-	< 0.0005
Calcium - Dissolved mg/l	20.0	93	85-115	500	16-W651	479	895	83	75-125	895	900	84	0.6	20	-		< 1 < 1
Calcium - Total mg/l	20.0	94	80-120	2000 500	16-M828 16-W651	1730 482	3580 955	92 95	75-125 75-125	955	950	94	0.5	20	-	-	< 1 < 1
Chloride mg/l	30.0	98 98	80-120 80-120	30.0 30.0	16-W649 16-W621	< 1 6.3	28.5 34.7	95 95	80-120 80-120	28.5 34.7	27.7 35.2	92 96	2.8 1.4	20 20		-	<1 <1 <1
Chromium - Dissolved mg/l	0.1000 0.1000	102 102	80-120 80-120	0.100 0.100 0.100 0.100	16-W599QC 16-W702QC 16-W694QC 16-W695QC	< 0.002 0.0087 0.0025 0.0053	0.1008 0.1117 0.1072 0.1080	101 103 105 103	75-125 75-125 75-125 75-125	0.1008 0.1117 0.1072 0.1080	0.1042 0.1086 0.1098 0.1095	104 100 107 104	3.3 2.8 2.4 1.4	20 20 20 20 20	-	-	< 0.002 < 0.002
Chromium - Total mg/l	0.1000	104	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.002 0.0024 0.0037	0.4120 0.4160 0.1010	103 103 97	75-125 75-125 75-125	0.4120 0.4160 0.1010	0.3970 0.4092 0.1054	99 102 102	3.7 1.6 4.3	20 20 20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.1000	101	80-120	0.100 0.100	16-W599QC 16-W702QC	< 0.002 < 0.002	0.0988 0.1030	99 103	75-125 75-125	0.0988 0.1030	0.1023 0.1023	102 102	3.5 0.7	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	108	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.002 < 0.002 < 0.002	0.4192 0.4010 0.1006	105 100 101	75-125 75-125 75-125	0.4192 0.4010 0.1006	0.4062 0.4032 0.1021	102 101 102	3.1 0.5 1.5	20 20 20	-	-	< 0.002
Fluoride mg/l	0.50 0.50	104 104	90-110 90-110	0.500 0.500	16-W681 16-W692	0.30 0.12	0.77 0.62	94 100	80-120 80-120	0.77 0.62	0.79 0.62	98 100	2.6 0.0	20 20	-	-	< 0.1 < 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	103	80-120	0.100 0.100	16-W599QC 16-W702QC	< 0.0005 0.0006	0.0968 0.0934	97 93	75-125 75-125	0.0968 0.0934	0.0966 0.0936	97 93	0.2 0.2	20 20	-	-	< 0.0005

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Lab IDs: 16-W648 to 16-W6	6-W652 Project: CCR Groundwater/2nd												Work Order: 201682-0831					
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Spike Orig	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	Dup	A STATE OF THE STA	Known Rec (%)	Known % Rec Limits	Method Blank	
Lead - Total mg/l	0.1000	101	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	< 0.0005 < 0.0005 0.0023	0.4100 0.3990 0.0984	102 100 96	75-125 75-125 75-125	0.4100 0.3990 0.0984	0.3938 0.4000 0.0999	98 100 98	4.0 0.3 1.5	20 20 20	-	-	< 0.0005	
Lithium - Dissolved mg/l	0.40 0.40	110 110	85-115 85-115	0.400 0.400	16-W639 16-W683	0.10 0.33	0.57 0.77	118 110	75-125 75-125	0.57 0.77	0.57 0.77	118 110	0.0	20 20	-	-	< 0.1 < 0.1 < 0.1	
Lithium - Total mg/l	0.40	115	85-115	0.400 2.00 2.00	16-W639 16-W648 16-W680	0.10 1.44 1.02	0.56 3.58 3.34	115 107 116	75-125 75-125 75-125	0.56 3.58 3.34	0.54 3.56 3.25	110 106 112	3.6 0.6 2.7	20 20 20	-	-	< 0.1 < 0.1	
Magnesium - Dissolved mg/l	20.0	102	80-120	500	16-W651	435	880	89	75-125	880	885	90	0.6	20	-	-	< 1 < 1	
Magnesium - Total mg/l	20.0	104	80-120	2000 500	16-M828 16-W651	< 20 438	2040 935	102 99	75-125 75-125	935	930	98	0.5	20	-	-	< 1 < 1	
Mercury - Dissolved mg/l	0.0020	90	85-115	0.002	16-W683	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	_	< 0.0002	
Mercury - Total mg/l	0.0020 0.0020	95 95	85-115 85-115	0.002 0.002 0.002 0.002	16-W621 16-D1386 16-W649 16-W690	< 0.0002 < 0.0002 < 0.0002 < 0.0002	0.0019 0.0017 0.0018 0.0018	95 85 90 90	70-130 70-130 70-130 70-130	0.0019 0.0017 0.0018 0.0018	0.0018 0.0017 0.0018 0.0017	90 85 90 85	5.4 0.0 0.0 5.7	20 20 20 20 20	-	-	< 0.0002 < 0.0002	
Molybdenum - Dissolved mg/l	0.1000 0.1000	89 89	80-120 80-120	0.100 0.100 0.100 0.100	16-W599QC 16-W702QC 16-W694QC 16-W695QC	0.0187 0.0036 < 0.002 < 0.002	0.1062 0.0922 0.0948 0.0942	88 89 95 94	75-125 75-125 75-125 75-125	0.1062 0.0922 0.0948 0.0942	0.1157 0.1003 0.1016 0.0996	97 97 102 100	8.6 8.4 6.9 5.6	20 20 20 20 20	-	-	< 0.002 < 0.002	
Molybdenum - Total mg/l	0.1000	90	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	0.0035 < 0.002 0.0025	0.3076 0.3324 0.0950	76 83 92	75-125 75-125 75-125	0.3076 0.3324 0.0950	0.3280 0.3560 0.1012	81 89 99	6.4 6.9 6.3	20 20 20	-	-	< 0.002	
pH units	-	-	-	-	н	-	-	-	-	8.2	7.9	-	3.7	20	-	-	-	
Potassium - Dissolved mg/l	10.0	89	85-115	100	16-W651	18.8	113	94	75-125	113	114	95	0.9	20	-	-	<1 <1	

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Lab IDs: 16-W648 to 16-W652 Project: CCR Groundwater/2nd Qtr 2016											Work Order: 201682-0831						
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	A PARAMETERS AND A SECOND CONTROL	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0	92	80-120	400 100	16-M828 16-W651	456 18.4	880 118	106 100	75-125 75-125	118	118	100	0.0	20	-	-	< 1 < 1
Selenium - Dissolved mg/l	0.1000 0.1000	113 106	80-120 80-120	0.100 0.100 0.400	16-W599 16-W702 16-W799QC	0.0717 < 0.002 < 0.002	0.1950 0.1186 0.4370	123 119 109	75-125 75-125 75-125	0.1950 0.1186 0.4370	0.2006 0.1204 0.4094	129 120 102	2.8 1.5 6.5	20 20 20	-	-	< 0.002 < 0.002
Selenium - Total mg/l	0.1000 0.1000	114	80-120 80-120	0.400 0.400 0.100 0.400 0.400 0.100	16-W639 16-W648 16-W659 16-W680 16-W692 16-W704	0.0976 0.0802 < 0.002 0.0066 0.1326 < 0.002	0.5830 0.5804 0.1144 0.4782 0.6122 0.1198	121 125 114 118 120 120	75-125 75-125 75-125 75-125 75-125 75-125	0.5830 0.5804 0.1144 0.4782 0.6122 0.1198	0.5424 0.5738 0.1172 0.4790 0.6064 0.1186	111 123 117 118 118 119	7.2 1.1 2.4 0.2 1.0 1.0	20 20 20 20 20 20 20	-	-	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	106	85-115	500	16-W651	258	705	89	75-125	705	705	89	0.0	20	-	-	<1 <1
Sodium - Total mg/l	20.0	102	80-120	2000 500	16-M828 16-W651	5380 232	7220 715	92 97	75-125 75-125	715	720	98	0.7	20	-	-	< 1 < 1
Sulfate mg/l	100	103	90-110	100	16-W649	< 5	100	100	80-120	100	99.9	100	0.1	20	-	-	< 5
Thallium - Dissolved mg/l	0.1000	101	80-120	0.100 0.100	16-W599QC 16-W702QC	< 0.0005 < 0.0005	0.0986 0.0962	99 96	75-125 75-125	0.0986 0.0962	0.1000 0.0969	100 97	1.4	20 20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	101	80-120	0.400 0.400 0.100	16-W634QC 16-W648QC 16-W659QC	0.0010 < 0.0005 < 0.0005	0.3772 0.3686 0.1012	94 92 101	75-125 75-125 75-125	0.3772 0.3686 0.1012	0.3740 0.3732 0.1006	93 93 101	0.9 1.2 0.6	20 20 20	-	-	< 0.0005
Total Alkalinity mg/l CaCO3	410 410	94 92	90-110 90-110	410	16-W648	413	783	90	80-120	783	779	89	0.5	20	100	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	7750	7640	-	1.4	20		-	< 5
Total Suspended Solids mg/l	-	- 00	-	-	-	-	-	-	-	18	19	_	5.4	20	-	-	< 1

Approved by: Com 100
2 May 16



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

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: Dup 1 Sample Site: MDU Heskett

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Report Date: 2 May 16 Lab Number: 16-W648 Work Order #:82-0831 Account #: 002800

Date Sampled: 6 Apr 16

Date Received: 7 Apr 16 8:00 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	7 Apr 16	KMD
рН	* 7.0	units	N/A	SM4500 H+ B	7 Apr 16 17:00	CC
Total Suspended Solids	19	mg/l	1	I3765-85	7 Apr 16 15:24	MF
Total Alkalinity	413	mg/l CaCO3	20	SM2320-B	7 Apr 16 17:00	CC
Fluoride	0.68	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	5770	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	238	mg/l	1.0	SM4500-Cl-E	7 Apr 16 11:08	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 11:28	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	8050	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	376	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Magnesium - Total	960	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Sodium - Total	990	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Potassium - Total	32.6	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Lithium - Total	1.44	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.44	mg/l	0.10	6010	12 Apr 16 13:04	KMD
Calcium - Dissolved	377	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	905	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	925	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	30.1	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	1.42	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.41	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Barium - Total	0.0084	mg/l ·	0.0020	6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Selenium - Total	0.0802	mg/l	0.0020	6020	9 Apr 16 20:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Apr 16 13:00	KMD
Arsenic - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Barium - Dissolved	0.0065	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 10:22	CC

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @= Due to sample matrix #= Due to conduct the sample quantity += Due to integrate the sample quantity += Due to += Due

= Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016