



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett	Event:	Work Order Number: 82-1382
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): <i>Joseph</i>

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type			Field Parameters			Analysis Required
					1 liter	500mL Nitric	500mL Nitric (filtered)	Temp (°C)	Spec. Cond.	pH	
W2011	104	25 May 17	0845	GW	X	X	X	9.82	13896	6.83	MDU CCR List with TSS and Dissolved CCR Metals.
W2012	105	25 May 17	0913	GW	X	X	X	9.16	6998	6.62	
W2013	Dup 1	25 May 17	—	GW	X	X	X	—	—	—	
W2014	FB	25 May 17	—	W	X	X	X	—	—	—	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
<i>[Signature]</i>	25 May 17 1340	Log In Walk In #2	8.7 ROI TM562 / TM588
1			
2			

Received by:	
Name:	Date/Time
<i>[Signature]</i>	25 May 2017 1310



CASE NARRATIVE – AMENDED 31 AUG 17 (Reporting)

MVTL Lab Reference No/SDG: 201782-1383
IML Lab Reference No/SDG: S1706027
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR May 2017
MVTL Laboratory Identifications: 17-W2015 through 17-W2018
IML Laboratory Identifications: S1706027-001 through S1706027-004
Page 1 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
104	17-W2015	S1706027-001
105	17-W2016	S1706027-002
Dup 1	17-W2017	S1706027-003
FB	17-W2018	S1706027-004

I. RECEIPT

- All samples were received at the laboratory on 25 May 2017 at 1340.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 16.7°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 1 Jun 2017.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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



CASE NARRATIVE – AMENDED 31 AUG 17 (Reporting)

MVTL Lab Reference No/SDG: 201782-1383
IML Lab Reference No/SDG: S1706027
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR May 2017
MVTL Laboratory Identifications: 17-W2015 through 17-W2018
IML Laboratory Identifications: S1706027-001 through S1706027-004
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 on the individual analytical laboratory report or on the IML Case Narrative.

V. REPORTING

- 10 Mar 16: Per email from Barr Engineering, 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.
- 31 Aug 17: Per email dated 24 Aug 17 from Terri Olson with Barr Engineering, the IML reports were amended to correct for erroneous sample collection dates.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 31 Aug 17
Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From: Terri A. Olson <TOlson@barr.com>
Sent: Thursday, August 24, 2017 3:18 PM
To: Claudette Carroll
Subject: RE: Emailing - 201782-1383 MDU HESK CCR RADIOCHEM.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Claudette,

The date sampled was incorrect on the COC sent to IML so their report (S1706027) has the incorrect sample dates. Please revise.

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: Tuesday, July 25, 2017 3:26 PM
To: Barr Data Management <BarrDM@barr.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Terri A. Olson <TOlson@barr.com>; Tonia D. O'Brien <tobrien@barr.com>
Subject: Emailing - 201782-1383 MDU HESK CCR RADIOCHEM.pdf

Hello all,

Please find attached the Radiochem results for the May 2017 CCR sampling done at MDU Heskett. Hard copies to follow to Sam.

Have a great afternoon!
Claudette



Minnesota Valley Testing
Laboratories, Inc.
Providing Analytical Excellence Since 1951



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 25 Jul 17
Lab Number: 17-W2015
Work Order #: 82-1383
Account #: 002800
Date Sampled: 25 May 17 8:45
Date Received: 25 May 17 13:40
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: 104

Temp at Receipt: 16.7C

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.83	units	NA	SM 4500 H+ B	25 May 17	8:45	JSM
Temperature - Field	9.82	Degrees C	NA	SM 2550B	25 May 17	8:45	JSM
Conductivity - Field	13896	umhos/cm	1	EPA 120.1	25 May 17	8:45	JSM
Radium 226	See Attached Report				12 Jun 17		OL
Radium 228	See Attached Report				28 Jun 17		OL

Approved by:

Claudette K. Carroll

CC
25 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 25 Jul 17
Lab Number: 17-W2016
Work Order #: 82-1383
Account #: 002800
Date Sampled: 25 May 17 10:13
Date Received: 25 May 17 13:40
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: 105

Temp at Receipt: 16.7C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.62	units	NA	SM 4500 H+ B	25 May 17 10:13	JSM
Temperature - Field	9.16	Degrees C	NA	SM 2550B	25 May 17 10:13	JSM
Conductivity - Field	6998	umhos/cm	1	EPA 120.1	25 May 17 10:13	JSM
Radium 226	See Attached Report				12 Jun 17	OL
Radium 228	See Attached Report				28 Jun 17	OL

Approved by:

Claudette K. Carroll ^{CC} *25JUL17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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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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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 25 Jul 17
Lab Number: 17-W2017
Work Order #: 82-1383
Account #: 002800
Date Sampled: 25 May 17
Date Received: 25 May 17 13:40
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: Dup 1

Temp at Receipt: 16.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			12 Jun 17	OL
Radium 228	See Attached Report			28 Jun 17	OL

Approved by:

Claudette K. Carroll ^{CC} *25JUL17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 25 Jul 17
Lab Number: 17-W2018
Work Order #: 82-1383
Account #: 002800
Date Sampled: 25 May 17
Date Received: 25 May 17 13:40
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: FB

Temp at Receipt: 16.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			18 Jul 17	OL
Radium 228	See Attached Report			28 Jun 17	OL

Approved by:

CC
Claudette K. Carroll 25 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



Date: 7/19/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201782-1383
Lab Order: S1706027

CASE NARRATIVE
Report ID: S1706027002
(Replaces S1706027001)

Samples 17-W2015 104, 17-W2016 105, 17-W2017 Dup 1, and 17-W2018 FB were received on June 1, 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 S1706027002 replaces report S1706027001. The sample dates were incorrect on the COC.

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1383
Lab ID: S1706027-001
ClientSample ID: 17-W2015 104
COC: 201782-1383

Date Reported: 8/24/2017
Report ID: S1706027002
(Replaces S1706027001)

WorkOrder: S1706027
CollectionDate: 5/25/2017 8:45:00 AM
DateReceived: 6/1/2017 11:05:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	06/12/2017 1555 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	06/12/2017 1555 MB
Radium 228	-2.7	pCi/L		1	Ga-Tech	06/28/2017 354 MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	06/28/2017 354 MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Wade Nieuwsma
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1383
Lab ID: S1706027-002
ClientSample ID: 17-W2016 105
COC: 201782-1383

Date Reported 8/24/2017
Report ID S1706027002
(Replaces S1706027001)

WorkOrder: S1706027
CollectionDate: 5/25/2017 10:13:00 AM
DateReceived: 6/1/2017 11:05:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radionuclides - Total

Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	06/12/2017 1555 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	06/12/2017 1555 MB
Radium 228	-1.0	pCi/L		1	Ga-Tech	06/28/2017 657 MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	06/28/2017 657 MB


These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

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

Reviewed by: 
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

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

Date Reported 8/24/2017
Report ID S1706027002
(Replaces S1706027001)

ProjectName: 201782-1383
Lab ID: S1706027-003
ClientSample ID: 17-W2017 Dup 1
COC: 201782-1383

WorkOrder: S1706027
CollectionDate: 5/25/2017
DateReceived: 6/1/2017 11:05:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radionuclides - Total

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

These results apply only to the samples tested.

RL - Reporting Limit

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

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

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



Sample Analysis Report

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

Date Reported 8/24/2017
Report ID S1706027002
(Replaces S1706027001)

ProjectName: 201782-1383
Lab ID: S1706027-004
ClientSample ID: 17-W2018 FB
COC: 201782-1383

WorkOrder: S1706027
CollectionDate: 5/25/2017
DateReceived: 6/1/2017 11:05:00 AM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	07/18/2017 1022 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	07/18/2017 1022 MB
Radium 228	0.8	pCi/L		1	Ga-Tech	06/28/2017 1304 MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	06/28/2017 1304 MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Wade Nieuwsma
Wade Nieuwsma, Assistant Laboratory Manager



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1704027
Project: 201782-0743

Date: 5/1/2017
Report ID: S1704027001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-428 (04/17/17 15:54)	Analyte	RunNo: 145016	PrepDate: 04/10/17 12:00	BatchID 13075					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

MB-429 (04/21/17 15:43)	Analyte	RunNo: 145273	PrepDate: 04/12/17 12:00	BatchID 13101					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-428 (04/17/17 18:57)	Analyte	RunNo: 145016	PrepDate: 04/10/17 12:00	BatchID 13075					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		39	1	40.1		98.0	65.9 - 132		

LCS-429 (04/21/17 18:45)	Analyte	RunNo: 145273	PrepDate: 04/12/17 12:00	BatchID 13101					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		40	1	40.1		99.4	65.9 - 132		

Radium 228 by Ga/Tech		Sample Type	LCSD		Units: pCi/L				
LCSD-428 (04/17/17 22:01)	Analyte	RunNo: 145016	PrepDate: 04/10/17 12:00	BatchID 13075					
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		40	1	39	1.47	99.5	20		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
S1704025-003AMS (04/18/17 22:29)	Analyte	RunNo: 145016	PrepDate: 04/10/17 12:00	BatchID 13075					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		74	2	80.1	ND	92.6	50 - 139		

MS-429 (04/22/17 00:54)	Analyte	RunNo: 145273	PrepDate: 04/12/17 12:00	BatchID 13101					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		41	1	40.1	ND	101	50 - 139		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
S1704025-003AMSD (04/19/17 01:32)	Analyte	RunNo: 145016	PrepDate: 04/10/17 12:00	BatchID 13075					
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		82	2	74	9.64	102	20		

MSD-429 (04/22/17 03:57)	Analyte	RunNo: 145273	PrepDate: 04/12/17 12:00	BatchID 13101					
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		43	1	41	5.19	107	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
 - S Spike Recovery outside accepted recovery limits



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1704027
Project: 201782-0743

Date: 5/1/2017
Report ID: S1704027001

Radium 226 in Water -	Sample Type	MBLK	Units: pCi/L				
MB-1738 (04/20/17 14:04)	RunNo:	145012	PrepDate:	04/12/17 0:00	BatchID 13074		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 in Water -	Sample Type	LCS	Units: pCi/L				
LCS-1738 (04/20/17 14:04)	RunNo:	145012	PrepDate:	04/12/17 0:00	BatchID 13074		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	6.5	0.2	5.89	110	67.1 - 122		

Radium 226 in Water -	Sample Type	LCSD	Units: pCi/L				
LCSD-1738 (04/20/17 14:04)	RunNo:	145012	PrepDate:	04/12/17 0:00	BatchID 13074		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.2	0.2	6.5	4.82	105	20	

Radium 226 in Water -	Sample Type	MS	Units: pCi/L				
S1704026-003AMS (04/20/17 14:04)	RunNo:	145012	PrepDate:	04/12/17 0:00	BatchID 13074		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	11.0	0.4	11.8	ND	93.3	65 - 131	

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



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

Chain of Custody Record

Phone: (701) 258-9720

Toll Free: (800) 279-6885

Fax: (701) 258-9724

201782-1383

Company Name and Address: <u>MVTL</u> <u>2616 E Broadway</u> <u>Bismarck, ND 58501</u>	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above): <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 26-May-17
	Project Name/Number:	Purchase Order #: BL5886

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
51706027 001	17-W2015	104	GW	26-Apr-17	* 845		4					Ra226 & Ra228
002	17-W2016	105	GW	26-Apr-17	* 1013		4					Ra226 & Ra228
003	17-W2017	Dup 1	GW	26-Apr-17	*		4					Ra226 & Ra228
004	17-W2018	FB	GW	26-Apr-17	*		4					Ra226 & Ra228

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

* collection date was 25 May 17 31 Aug 17

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	26-May-17	1700		<i>[Signature]</i>	6-1-17	11:05 20.6°C
2.						

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Jerry

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration

Date: 25 May 17 Time: 0810

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	15.18	7.04	7.00	6.95-7.05	-24.7	0 +/- 50
Buffer 10	15.46	9.98	10.00	9.95-10.05	-200.8	-180 +/- 50

Conductivity

Buffer 10000	Check	Buffer 5000
14.89	9998	10000
	±10%	4954

ORP

231 mV @ 25C	±10 mV
15.40	242.4
	244.0

DO

mg/L	Barometric Pressure (mm Hg)
14.43	754.00
	99.2%

Post Site Check

Time: 1030

pH	Temp °C	Reading
Buffer 7	16.01	7.01

Conductivity

Buffer 5000	Reading
15.31	5034

Date: _____ Time: _____

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7				6.95-7.05		0 +/- 50
Buffer 10				9.95-10.05		-180 +/- 50

Conductivity

Buffer 10000	Check	Buffer 5000
	±10%	

ORP

231 mV @ 25C	±10 mV

DO

mg/L	Barometric Pressure (mm Hg)

Time: _____

pH	Temp °C	Reading
Buffer 7		

Conductivity

Buffer 5000	Reading



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 104
Sampling Personal: Jerry Meyer

Weather Conditions: Temp: 50 °F Wind: SWS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	13.54	ft	
Total Well Depth:	—		
Well Volume:	—		
Depth to Top of Pump:	—		
Water Level After Sample:	13.85	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	15
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	25 May 17	Time Purging Began:	0820	am/pm
Well Purged Dry?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	25 May 17	Time of Sampling:	0845	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
1	0825	10.03	13781	6.89	9.04	261.7	3.87	13.85	500.0	Clear
2	0830	9.93	13914	6.84	9.64	264.7	2.15	13.85	500.0	Clear
3	0835	9.85	13918	6.83	9.81	265.7	1.66	13.87	500.0	Clear
4	0840	9.78	13928	6.82	10.13	264.4	1.27	13.95	500.0	Clear
5	0845	9.82	13896	6.83	10.26	264.0	1.10	13.88	500.0	Clear
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2500.0 mL



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2017
 Sample ID: 105
 Sampling Personal: Jerry Meyer

Weather Conditions: Temp: 60 °F Wind: S @ 5-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	12.46	ft	
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	12.72	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	No	Recover:	55 sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	No	PSI:	25
Duplicate Sample ID:	Dup 1		Pumping Rate:	100 mL/min
Purge Date:	25 May 17	Time Purging Began:	0938	am/pm
Well Purged Dry?	Yes	<input checked="" type="checkbox"/> No	Time Purged Dry:	— am/pm
Sample Date:	25 May 17	Time of Sampling:	1013	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			

Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
2	0948	8.82	5877	6.64	7.32	228.7	7.84	12.68	500.0	Clear
3	0953	8.64	5977	6.64	5.41	226.7	6.32	12.69	500.0	Clear
4	0958	8.76	6469	6.64	6.28	220.9	4.54	12.83	500.0	Clear
5	1003	8.68	6695	6.62	6.09	218.0	4.80	12.84	500.0	Clear
6	1008	8.92	6875	6.62	5.92	216.2	5.08	12.85	500.0	Clear
7	1013	9.16	6998	6.62	6.11	213.3	4.88	12.83	500.0	Clear
8										
9										
10										

Stabilized: Yes No
 Comments:

Total Volume Removed: 3500.0 mL

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

Chain of Custody Record

Project Name: MDU Heskett	Event:	Work Order Number: 82-1383
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): Jerry Meyer

Lab Number	Sample ID	Sample Information			Bottle Type							Field Parameters			Analysis Required	
		Date	Time	Sample Type	1 liter Nitric								Temp (°C)	Spec. Cond.		pH
W2015	104	25 May 17	0845	GW	4								9.82	13896	6.83	Rad 226 & Rad 228
W2016	105	25 May 17	1013	GW	4								9.16	6998	6.62	
W2017	Dy 1	25 May 17	—	GW	4								—	—	—	
W2018	PB	25 May 17	—	W	4								—	—	—	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1	25 May 17 1340	(Log In) Walk In #2	16.7 Ambient TM562 (TM588)
2			

Received by:	
Name:	Date/Time
	25 May 2017 1340



CASE NARRATIVE – AMENDED 29 AUG 2017 (MDU Sample Identification)

MVTL Lab Reference No/SDG: 201782-1676
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2471 through 17-W2477
Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
MW13	17-W2471
MW44R	17-W2472
MW70	17-W2473
MW101	17-W2474
MW102	17-W2475
Dup1	17-W2476
FB1	17-W2477

I. RECEIPT

- All samples were received at the laboratory on 22 Jun17 at 800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.2°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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



CASE NARRATIVE – AMENDED 29 AUG 2017 (MDU Sample Identification)

MVTL Lab Reference No/SDG: 201782-1676
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2471 through 17-W2477
Page 2 of 2

- For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
- One sulfate matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.

V. REPORTING

- Per email dated 25 Aug 17 from Terri Olson with Barr Engineering, the sample identifications on the case narrative were corrected to match the sample identifications on the COC and finalized reports. In addition, MW44 sample identification was changed to MW44R.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 29 Aug 17
Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From: Terri A. Olson <TOlson@barr.com>
Sent: Friday, August 25, 2017 11:44 AM
To: Claudette Carroll
Cc: Barr Data Management
Subject: RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Claudette,

The well ID for MW44 should also state MW44R.

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: Friday, August 25, 2017 9:13 AM
To: Terri A. Olson <TOlson@barr.com>
Subject: RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Hi Terri,

Sorry about that. The case narrative is entered manually and is incorrect. The reports and COC are correct, so the error does not affect the data. I will amend the case narrative and re-send the data package. These types of items are the reason that I am very excited about our new LIMs system. Can't wait until it is implemented and takes care of these issues. Again, sorry for the error. Thank you for having such a great eye!

Have a good Friday and a terrific weekend.

Claudette



From: Terri A. Olson [<mailto:TOlson@barr.com>]
Sent: Friday, August 25, 2017 8:20 AM
To: Claudette Carroll <ccarroll@mvtl.com>
Subject: RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Hi Claudette,

The case narrative page has sample IDs matched to different lab #s than within the report or on COC. Please check and let us know if this impacts any of the data results.

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: Monday, July 10, 2017 2:14 PM
To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Julie Crispin <jcrispin@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>
Subject: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Hello all,

Please find attached two data packages for the June 2017 sampling done at the MDU Heskett site. Hard copies to follow to Sam and EDDs will follow from our IT department.

Have a great afternoon!
Claudette



**Minnesota Valley Testing
Laboratories, Inc.**
Providing Analytical Excellence Since 1951

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

Quality Control Report

Lab IDs: 17-W2471 to 17-W2477

Project: MDU Heskett - CCR

Work Order: 201782-1676

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 - Total mg/l	0.1000	98	80-120	0.400	17W2438q	< 0.001	0.3906	98	75-125	0.3906	0.4090	102	4.6	20	-	-	< 0.001
				0.400	17W2476q	< 0.001	0.4132	103	75-125	0.4132	0.4384	110	5.9	20	-	-	
				0.400	17W2497q	< 0.001	0.4158	104	75-125	0.4158	0.4412	110	5.9	20	-	-	
Arsenic - Total mg/l	0.1000	96	80-120	0.400	17W2438q	< 0.002	0.3900	98	75-125	0.3900	0.4102	103	5.0	20	-	-	< 0.002
				0.400	17W2476q	< 0.002	0.4276	107	75-125	0.4276	0.4398	110	2.8	20	-	-	
				0.400	17W2497q	< 0.002	0.4178	104	75-125	0.4178	0.4384	110	4.8	20	-	-	
Barium - Total mg/l	0.1000	92	80-120	0.400	17W2438q	0.0374	0.4064	92	75-125	0.4064	0.4048	92	0.4	20	-	-	< 0.002
				0.400	17W2476q	0.0162	0.3808	91	75-125	0.3808	0.4050	97	6.2	20	-	-	
				0.400	17W2497q	0.0085	0.3726	91	75-125	0.3726	0.4028	99	7.8	20	-	-	
Beryllium - Total mg/l	0.1000	107	80-120	0.400	17-W2438	< 0.0005	0.4078	102	75-125	0.4078	0.4176	104	2.4	20	-	-	< 0.0005
				0.400	17-W2476	< 0.0005	0.4136	103	75-125	0.4136	0.4142	104	0.1	20	-	-	
				0.400	17-W2497	< 0.0005	0.4284	107	75-125	0.4284	0.4384	110	2.3	20	-	-	
Boron - Total mg/l	0.40	100	80-120	0.400	17-W2438	0.39	0.78	98	75-125	0.78	0.78	98	0.0	20	-	-	< 0.1
	0.40	92	80-120	0.400	17-W2476	0.32	0.64	80	75-125	0.64	0.67	88	4.6	20	-	-	< 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Total mg/l	0.1000	102	80-120	0.400	17W2438q	< 0.0005	0.3932	98	75-125	0.3932	0.4032	101	2.5	20	-	-	< 0.0005
				0.400	17W2476q	< 0.0005	0.4002	100	75-125	0.4002	0.4222	106	5.4	20	-	-	
				0.400	17W2497q	< 0.0005	0.4108	103	75-125	0.4108	0.4280	107	4.1	20	-	-	
Calcium - Total mg/l	20.0	112	80-120	500	17W2473q	419	895	95	75-125	895	910	98	1.7	20	-	-	< 1 < 1
Chloride mg/l	30.0	87	80-120	60.0	17-W2490	33.4	97.2	106	80-120	97.2	97.6	107	0.4	20	-	-	< 1
	30.0	86	80-120												-	-	
Chromium - Total mg/l	0.1000	96	80-120	0.400	17W2438q	< 0.002	0.3546	89	75-125	0.3546	0.3712	93	4.6	20	-	-	< 0.002
				0.400	17W2476q	< 0.002	0.3914	98	75-125	0.3914	0.3994	100	2.0	20	-	-	
				0.400	17W2497q	< 0.002	0.3774	94	75-125	0.3774	0.3978	99	5.3	20	-	-	



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER
ACIL

Quality Control Report

Lab IDs: 17-W2471 to 17-W2477

Project: MDU Heskett - CCR

Work Order: 201782-1676

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
Cobalt - Total mg/l	0.1000	95	80-120	0.400	17W2438q	< 0.002	0.3658	91	75-125	0.3658	0.3772	94	3.1	20	-	-	< 0.002
				0.400	17W2476q	< 0.002	0.3864	97	75-125	0.3864	0.4010	100	3.7	20	-	-	
				0.400	17W2497q	< 0.002	0.3782	95	75-125	0.3782	0.3974	99	5.0	20	-	-	
Fluoride mg/l	0.50	104	90-110	0.500	17-W2471	0.88	1.29	82	80-120	1.29	1.29	82	0.0	20	-	-	< 0.1
				0.500	17-W2473	0.33	0.80	94	80-120	0.80	0.82	98	2.5	20	-	-	< 0.1
Lead - Total mg/l	0.1000	93	80-120	0.400	17W2438q	< 0.0005	0.3550	89	75-125	0.3550	0.3568	89	0.5	20	-	-	< 0.0005
				0.400	17W2476q	< 0.0005	0.3660	92	75-125	0.3660	0.3908	98	6.6	20	-	-	
				0.400	17W2497q	< 0.0005	0.3664	92	75-125	0.3664	0.3912	98	6.5	20	-	-	
Lithium - Total mg/l	0.40	105	80-120	0.400	17-W2438	0.10	0.52	105	75-125	0.52	0.55	112	5.6	20	-	-	< 0.1
	0.40	108	80-120	0.400	17-W2476	0.73	1.10	92	75-125	1.10	1.10	92	0.0	20	-	-	< 0.1
				0.400	17-W2497	1.01	1.50	122	75-125	1.50	1.41	100	6.2	20	-	-	< 0.1
Mercury - Total mg/l	0.0020	100	85-115	0.100	17-M1524	< 0.01	0.0991	99	70-130	0.0991	0.1003	100	1.2	20	-	-	< 0.0002
				0.002	17-W2439	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	
				0.002	17-W2475	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	
				0.002	17-W2479	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	
Molybdenum - Total mg/l	0.1000	99	80-120	0.400	17W2438q	< 0.002	0.3682	92	75-125	0.3682	0.3964	99	7.4	20	-	-	< 0.002
				0.400	17W2476q	< 0.002	0.3906	98	75-125	0.3906	0.4224	106	7.8	20	-	-	
				0.400	17W2497q	< 0.002	0.3920	98	75-125	0.3920	0.4302	108	9.3	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	20	-	-	-
Selenium - Total mg/l	0.1000	111	80-120	0.400	17W2438q	< 0.005	0.4222	106	75-125	0.4222	0.4440	111	5.0	20	-	-	< 0.002
				0.400	17W2476q	0.1768	0.6154	110	75-125	0.6154	0.6206	111	0.8	20	-	-	
				0.400	17W2497q	0.1814	0.6312	112	75-125	0.6312	0.6574	119	4.1	20	-	-	
Sulfate mg/l	100	94	80-120	1000	17-W2442	934	1750	82	80-120	1750	1710	78	2.3	20	-	-	< 5
	100	93	80-120	200	17-M1551	36.9	248	106	80-120	248	220	92	12.0	20	-	-	< 5
	100	104	80-120	100	17-W2477	< 5	102	102	80-120	102	102	102	0.0	20	-	-	< 5

Quality Control Report

Lab IDs: 17-W2471 to 17-W2477

Project: MDU Heskett - CCR

Work Order: 201782-1676

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
Thallium - Total mg/l	0.1000	92	80-120	0.400	17W2438q	< 0.0005	0.3520	88	75-125	0.3520	0.3568	89	1.4	20	-	-	< 0.0005
				0.400	17W2476q	< 0.0005	0.3634	91	75-125	0.3634	0.3808	95	4.7	20	-	-	
				0.400	17W2497q	< 0.0005	0.3616	90	75-125	0.3616	0.3858	96	6.5	20	-	-	
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	6440	6370	-	1.1	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	4510	4590	-	1.8	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	< 10	< 10	-	0.0	*	-	-	

Approved by: C. Cantel
 7 JUL 17



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2471
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17 7:41
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW13

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.88	units	NA	SM 4500 H+ B	21 Jun 17 7:41	JSM
pH	* 7.2	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	10.1	Degrees C	NA	SM 2550B	21 Jun 17 7:41	JSM
Conductivity - Field	10510	umhos/cm	1	EPA 120.1	21 Jun 17 7:41	JSM
Fluoride	0.88	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	6160	mg/l	5.00	ASTM D516-07	22 Jun 17 13:45	EMS
Chloride	87.6	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	9840	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	429	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.74	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0130	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1560	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

CC
6 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
 ! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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Amended 29 Aug 17 (Sample ID) - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2472
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17 14:35
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW44R

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.54	units	NA	SM 4500 H+ B	21 Jun 17 14:35	JSM
pH	* 6.9	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	14.2	Degrees C	NA	SM 2550B	21 Jun 17 14:35	JSM
Conductivity - Field	9287	umhos/cm	1	EPA 120.1	21 Jun 17 14:35	JSM
Fluoride	0.68	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	5830	mg/l	5.00	ASTM D516-07	29 Jun 17 10:50	EMS
Chloride	240	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	8970	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	458	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	1.45	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total	0.38	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0085	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.2372	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll *29 Aug 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2473
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17 11:18
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW70

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.94	units	NA	SM 4500 H+ B	21 Jun 17 11:18	JSM
pH	* 7.4	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	13.7	Degrees C	NA	SM 2550B	21 Jun 17 11:18	JSM
Conductivity - Field	4603	umhos/cm	1	EPA 120.1	21 Jun 17 11:18	JSM
Fluoride	0.33	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	2500	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	30.2	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	3920	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	419	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.37	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total	0.51	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0088	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.0151	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

*cc
6 JUL 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2474
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17 12:56
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW101

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.68	units	NA	SM 4500 H+ B	21 Jun 17 12:56	JSM
pH	* 7.2	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	14.5	Degrees C	NA	SM 2550B	21 Jun 17 12:56	JSM
Conductivity - Field	4854	umhos/cm	1	EPA 120.1	21 Jun 17 12:56	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	2760	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	15.4	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	4150	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	366	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.64	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	1.22	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0129	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

*CC
6 Jul 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
 ! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2475
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17 9:57
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW102

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.73	units	NA	SM 4500 H+ B	21 Jun 17 9:57	JSM
pH	* 7.3	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	11.5	Degrees C	NA	SM 2550B	21 Jun 17 9:57	JSM
Conductivity - Field	7109	umhos/cm	1	EPA 120.1	21 Jun 17 9:57	JSM
Fluoride	0.24	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	4270	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	6.6	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	6440	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	492	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.63	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	1.05	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	0.0022	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0169	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

*CC
6 JUL 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2476
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: Dup 1

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH	* 7.4	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Fluoride	0.87	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	6960	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	88.2	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	9950	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	426	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.73	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0162	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1768	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

6 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix

= Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Jul 17
 Lab Number: 17-W2477
 Work Order #: 82-1676
 Account #: 002800
 Date Sampled: 21 Jun 17
 Date Received: 22 Jun 17 8:00
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: FB1

Temp at Receipt: 7.2C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH	* 6.2	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	< 1	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

*CC
6 JUL 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: MW13
Sampling Personal: *Jerry King*

Weather Conditions: Temp: 60 °F Wind: NOS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	29.33	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	—	
Water Level After Sample:	29.86	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		PSI:	20
Duplicate Sample ID:	Dup 1		Pumping Rate:	100 mL/min
Purge Date:	21 Jun 17	Time Purging Began:	0701	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm	
Sample Date:	21 Jun 17	Time of Sampling:	0741	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
1	6706	10.31	10597	6.99	6.89	261.3	3.41	29.49	500.0	Clear
2	0711	10.29	10516	6.96	5.43	259.5	2.66	29.71	500.0	Clear
3	0716	10.26	10492	6.95	4.88	255.2	1.92	29.80	500.0	Clear
4	0721	10.07	10489	6.85	4.98	254.6	5.09	29.82	500.0	Clear
5	0726	10.07	10489	6.89	5.11	232.4	12.6	29.83	500.0	Clear
6	0731	10.11	10492	6.88	5.25	215.7	14.8	29.82	500.0	Clear
7	0736	10.05	10503	6.88	5.37	213.6	14.7	29.87	500.0	Clear
8	0741	10.13	10510	6.88	5.41	201.3	13.9	29.89	500.0	Clear
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 44R CC 21 AUG 17
Sampling Personal: Jerry P. [Signature]

Weather Conditions: Temp: 75 °F Wind: N 85-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	<input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	No	
Casing Straight?	<input checked="" type="radio"/> Yes	No	
Grout Seal Intact?	<input checked="" type="radio"/> Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	26.16		ft
Total Well Depth:	—		
Well Volume:	— liters		
Depth to Top of Pump:	—		
Water Level After Sample:	26.30		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	No	Recover:	55 sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	21 June 17	Time Purging Began:	1415	am/pm
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	21 June 17	Time of Sampling:	1435	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time									clear, slightly turbid, turbid
1	1420	14.61	9291	6.57	7.06	149.0	5.44	26.28	500.0	Clear
2	1425	14.80	9272	6.55	3.12	149.2	4.88	26.25	500.0	Clear
3	1430	14.62	9293	6.55	3.07	150.1	2.86	26.25	500.0	Clear
4	1435	14.17	9287	6.54	3.03	151.4	2.01	26.26	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2000.0 mL



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

Field Datasheet

Groundwater Assessment

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

Weather Conditions: Temp: 70 °F Wind: NWS-10 Precip: Sunny / ~~Partly Cloudy~~ / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="radio"/> No	
Well Labeled?	Yes <input checked="" type="radio"/> No	
Casing Straight?	Yes <input checked="" type="radio"/> No	
Grout Seal Intact?	Yes <input checked="" type="radio"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	20.32	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	—	
Water Level After Sample:	22.00	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Recover:	SS sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	21 Jun 17	Time Purging Began:	10:55 10:53 am/pm	
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	21 Jun 17	Time of Sampling:	11:18 am/pm	
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time								clear, slightly turbid, turbid
1	1058	13.18	4602	6.98	6.16	53.4	20.96	500.0	clear
2	1103	12.58	4593	6.94	7.42	63.4	21.28	500.0	clear
3	1108	12.52	4603	6.94	7.79	66.9	21.46	500.0	clear
4	1113	13.81	4588	6.95	7.85	68.7	21.55	500.0	clear
5	1118	13.73	4603	6.94	7.98	70.9	21.56	500.0	clear
6									
7									
8									
9									
10									

Stabilized: Yes No
Comments:

Total Volume Removed: 2500.0 mL



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 101
Sampling Personal: *Jerry Poye*

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

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	36.30	ft
Total Well Depth:	—	
Well Volume:	—	
Depth to Top of Pump:	—	
Water Level After Sample:	39.70	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: 55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: 20
Duplicate Sample ID:	—	Pumping Rate: 100 mL/min
Purge Date:	21 June 17	Time Purging Began: 1226 am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	21 June 17	Time of Sampling: 1256 am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric	

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1231	15.08	4887	6.80	4.40	8.5	9.44	37.06	500.0	Clear
2	1236	14.32	4879	6.71	3.78	21.0	13.7	37.45	500.0	Clear
3	1241	13.93	4873	6.70	3.90	9.8	16.9	37.79	500.0	Clear
4	1246	14.25	4872	6.69	4.13	2.7	13.0	38.26	500.0	Clear
5	1251	14.30	4854	6.69	4.50	1.1	10.8	38.68	500.0	Clear
6	1256	14.53	4854	6.68	4.52	0.9	10.1	38.82	500.0	Clear
7										
8										
9										
10										

Stabilized: No
Comments:

Total Volume Removed: 3000.0 mL



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett

Event: 2017

Sample ID: 102

Sampling Personal: *Jerry Day*

Weather Conditions: Temp: 65 °F Wind: N05-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Casing Straight?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	16.39	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:		ft
Water Level After Sample:	19.11	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	55 sec.
Duplicate Sample?:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	PSI:	15
Duplicate Sample ID:			Pumping Rate:	100 mL/min
Purge Date:	21 Jun 17	Time Purging Began:	0917	am/pm
Well Purged Dry?:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Time Purged Dry:	
Sample Date:	21 Jun 17	Time of Sampling:	0957	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			
	250 mL Sulfuric			

Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	0932	11.68	8637	6.78	4.45	-13.4	32.5	17.10	500.0	Clear
2	0937	11.32	7833	6.73	5.71	-26.1	2.93	17.75	500.0	Clear
3	0942	11.43	7645	6.73	6.10	-25.0	1.62	17.81	500.0	Clear
4	0947	11.46	7397	6.73	6.48	-25.9	0.88	18.03	500.0	Clear
5	0952	11.38	7194	6.73	6.33	-27.1	0.74	18.12	500.0	Clear
6	0957	11.48	7109	6.73	6.50	-28.0	68.0	18.21	500.0	Clear
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000.0 mL

Comments:



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett	Event: June 2017	Work Order Number: 82-11076
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): <i>Jeremy Olson</i>

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type				Field Parameters			Analysis Required
					1 liter	500mL Nitric	500mL Nitric (filtered)	250 mL Sulfuric	Temp (°C)	Spec. Cond.	pH	
W2471	MW13	21 Jun 17	0741	GW	X	X	X	X	10.13	10510	6.88	MDU List C & List AA
W2472	MW41R *	21 Jun 17	1435	GW	X	X	X	X	14.17	9287	6.54	
W2473	MW70	21 Jun 17	1118	GW	X	X	X	X	13.73	4603	6.94	
W2474	MW101	21 Jun 17	1256	GW	X	X	X	X	14.53	4854	6.68	
W2475	MW102	21 Jun 17	0957	GW	X	X	X	X	11.48	7109	6.73	
W2476	Dup 1	21 Jun 17	NA	GW	X	X	X	X	—	—	—	
W2477	BB1	21 Jun 17	NA	W	X	X	X	X	—	—	—	

Comments:

** per email from Terri Olson with Burr (25 Aug 17)
28 Aug 17 cc*

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
<i>[Signature]</i>	21 Jun 17 1705	Log In Walk In #2	Kol 7.2 TM562 / TM588
1			
2			

Received by:	
Name:	Date/Time
<i>Angel Simonian</i>	22 June 17 PCO



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-1681
IML Lab Reference No/SDG: S1706486
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2482 through 17-W2488
IML Laboratory Identifications: S1706486-001 through S1706486-007

Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include MW13, MW44, MW70, MW101, MW102, Dup1, FB1.

I. RECEIPT

- All samples were received at the laboratory on 22 Jun 2017 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.
Temperature of samples upon receipt was 19.6°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.
All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-1681
IML Lab Reference No/SDG: S1706486
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2482 through 17-W2488
IML Laboratory Identifications: S1706486-001 through S1706486-007
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 on the individual analytical laboratory report or on the IML Case Narrative.

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 8 Aug 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
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2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724
1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.mvtl.com



Page: 1 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2482
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17 7:41
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW13

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.88	units	NA	SM 4500 H+ B	21 Jun 17	7:41	JSM
Temperature - Field	10.1	Degrees C	NA	SM 2550B	21 Jun 17	7:41	JSM
Conductivity - Field	10510	umhos/cm	1	EPA 120.1	21 Jun 17	7:41	JSM
Radium 226	See Attached Report				1 Aug 17		OL
Radium 228	See Attached Report				22 Jul 17		OL

Approved by:

Claudette K. Carroll

CC
8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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



Page: 2 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2483
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17 14:35
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW44

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.54	units	NA	SM 4500 H+ B	21 Jun 17 14:35	JSM
Temperature - Field	14.2	Degrees C	NA	SM 2550B	21 Jun 17 14:35	JSM
Conductivity - Field	9287	umhos/cm	1	EPA 120.1	21 Jun 17 14:35	JSM
Radium 226	See Attached Report				1 Aug 17	OL
Radium 228	See Attached Report				22 Jul 17	OL

Approved by: Claudette K. Carroll ^{CC} *8 Aug 17*
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 3 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2484
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17 11:18
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW70

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.94 units	NA	SM 4500 H+ B	21 Jun 17 11:18	JSM
Temperature - Field	13.7 Degrees C	NA	SM 2550B	21 Jun 17 11:18	JSM
Conductivity - Field	4603 umhos/cm	1	EPA 120.1	21 Jun 17 11:18	JSM
Radium 226	See Attached Report			1 Aug 17	OL
Radium 228	See Attached Report			22 Jul 17	OL

Approved by:

Claudette K. Carroll

cc
8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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www.mvttl.com



Page: 4 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2485
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17 12:56
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW101

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.68	units	NA	SM 4500 H+ B	21 Jun 17 12:56	JSM
Temperature - Field	14.5	Degrees C	NA	SM 2550B	21 Jun 17 12:56	JSM
Conductivity - Field	4854	umhos/cm	1	EPA 120.1	21 Jun 17 12:56	JSM
Radium 226	See Attached Report				1 Aug 17	OL
Radium 228	See Attached Report				22 Jul 17	OL

Approved by: Claudette K. Carroll ^{CC} 8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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
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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2486
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17 9:57
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW102

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.73	units	NA	SM 4500 H+ B	21 Jun 17	9:57	JSM
Temperature - Field	11.5	Degrees C	NA	SM 2550B	21 Jun 17	9:57	JSM
Conductivity - Field	7109	umhos/cm	1	EPA 120.1	21 Jun 17	9:57	JSM
Radium 226	See Attached Report				2 Aug 17		OL
Radium 228	See Attached Report				22 Jul 17		OL

Approved by:

Claudette K. Carroll

CC
8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 6 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2487
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: Dup 1

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			22 Jul 17	OL

Approved by:

Claudette K. Carroll

8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

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

Report Date: 7 Aug 17
Lab Number: 17-W2488
Work Order #: 82-1681
Account #: 002800
Date Sampled: 21 Jun 17
Date Received: 22 Jun 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: FB 1

Temp at Receipt: Ambient

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			28 Jul 17	OL

Approved by:

Claudette K. Carroll

8 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



Date: 8/3/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201782-1681
Lab Order: S1706486

CASE NARRATIVE
Report ID: S1706486002
(Replaces S1706486001)

Samples 17-W2482 MW13, 17-W2483 MW44, 17-W2484 MW70, 17-W2485 MW101, 17-W2486 MW102, 17-W2487 Dup1, and 17-W2488 FB1 were received on June 27, 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.

The report, S1706486001, was revised and replaced by report S1706486002 to correct the report style to display all values.

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-001
ClientSample ID: 17-W2482 MW13
COC: 201782-1681

Date Reported: 8/9/2017
Report ID: S1706486002
(Replaces S1706486001)

WorkOrder: S1706486
CollectionDate: 6/21/2017 7:41:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-1.3	pCi/L		1	Ga-Tech	07/22/2017 322	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 322	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-002
ClientSample ID: 17-W2483 MW44
COC: 201782-1681

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)

WorkOrder: S1706486
CollectionDate: 6/21/2017 2:35:00 PM
DateReceived: 6/27/2017 12:40:00 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	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-0.3	pCi/L		1	Ga-Tech	07/22/2017 626	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/22/2017 626	MB

These results apply only to the samples tested.

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-003
ClientSample ID: 17-W2484 MW70
COC: 201782-1681

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)
WorkOrder: S1706486
CollectionDate: 6/21/2017 11:18:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.18	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	07/22/2017 929	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 929	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-004
ClientSample ID: 17-W2485 MW101
COC: 201782-1681

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)

WorkOrder: S1706486
CollectionDate: 6/21/2017 12:56:00 PM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	07/22/2017 1232	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1232	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)

ProjectName: 201782-1681
Lab ID: S1706486-005
ClientSample ID: 17-W2486 MW102
COC: 201782-1681

WorkOrder: S1706486
CollectionDate: 6/21/2017 9:57:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	0.0	pCi/L		1	Ga-Tech	07/22/2017 1535	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1535	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-006
ClientSample ID: 17-W2487 Dup1
COC: 201782-1681

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)
WorkOrder: S1706486
CollectionDate: 6/21/2017
DateReceived: 6/27/2017 12:40:00 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	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.5	pCi/L		1	Ga-Tech	07/22/2017 1838	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1838	MB

These results apply only to the samples tested.

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

ProjectName: 201782-1681
Lab ID: S1706486-007
ClientSample ID: 17-W2488 FB1
COC: 201782-1681

Date Reported 8/9/2017
Report ID S1706486002
(Replaces S1706486001)

WorkOrder: S1706486
CollectionDate: 6/21/2017
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.2	pCi/L		1	Ga-Tech	07/28/2017 731	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 731	MB

These results apply only to the samples tested.

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1706486
Project: 201782-1681

Date: 8/3/2017
Report ID: S1706486002
(Replaces S1706486001)

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-449 (07/19/17 20:25)	Analyte	RunNo: 148244	PrepDate: 07/10/17 14:00	BatchID 13469					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

MB-450 (07/27/17 16:14)	Analyte	RunNo: 148477	PrepDate: 07/12/17 14:00	BatchID 13495					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-449 (07/19/17 23:28)	Analyte	RunNo: 148244	PrepDate: 07/10/17 14:00	BatchID 13469					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		40	1	39.3		102	65.9 - 132		

LCS-450 (07/27/17 19:17)	Analyte	RunNo: 148477	PrepDate: 07/12/17 14:00	BatchID 13495					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		34	1	39.3		85.5	65.9 - 132		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-449 (07/20/17 05:34)	Analyte	RunNo: 148244	PrepDate: 07/10/17 14:00	BatchID 13469					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 228 (Dissolved)		42	1	39.3	ND	106	50 - 139		
Total Radium 228		42	1	39.3	ND	106	50 - 139		

MS-450 (07/28/17 01:23)	Analyte	RunNo: 148477	PrepDate: 07/12/17 14:00	BatchID 13495					
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		41	1	39.3	ND	105	50 - 139		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-449 (07/20/17 08:38)	Analyte	RunNo: 148244	PrepDate: 07/10/17 14:00	BatchID 13469					
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 228 (Dissolved)		43	1	42	3.18	109	20		
Total Radium 228		43	1	42	3.18	109	20		

MSD-450 (07/28/17 04:27)	Analyte	RunNo: 148477	PrepDate: 07/12/17 14:00	BatchID 13495					
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		36	1	41	13.8	91.7	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
 - S Spike Recovery outside accepted recovery limits



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1706486
Project: 201782-1681

Date: 8/3/2017
Report ID: S1706486002
(Replaces S1706486001)

Radium 226 in Water -

Sample Type **MBLK**

Units: pCi/L

MB-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/24/17 0:00	BatchID 13498
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 ND 0.2

MB-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/26/17 0:00	BatchID 13492
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 ND 0.2

Radium 226 in Water -

Sample Type **LCS**

Units: pCi/L

LCS-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/24/17 0:00	BatchID 13498
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 6.4 0.2 6.41 99.4 67.1 - 122

LCS-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/26/17 0:00	BatchID 13492
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 6.5 0.2 6.41 102 67.1 - 122

Radium 226 in Water -

Sample Type **MS**

Units: pCi/L

MS-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/24/17 0:00	BatchID 13498
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 5.9 0.2 6.41 ND 91.5 65 - 131

MS-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/26/17 0:00	BatchID 13492
Analyte	Result	RL	Spike Ref Samp %REC % Rec Limits Qual

Radium 226 6.5 0.2 6.41 ND 101 65 - 131

Radium 226 in Water -

Sample Type **MSD**

Units: pCi/L

MSD-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/24/17 0:00	BatchID 13498
Analyte	Result	RL	Conc %RPD %REC % RPD Limits Qual

Radium 226 6.1 0.2 5.9 3.71 94.9 20

MSD-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/26/17 0:00	BatchID 13492
Analyte	Result	RL	Conc %RPD %REC % RPD Limits Qual

Radium 226 6.7 0.2 6.5 3.74 104 20

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



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

Chain of Custody Record

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

201782-1681

Company Name and Address: MVTL 2616 E Broadway Bismarck, ND 58501	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above): PO Box 249 New Ulm, MN 56073	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 23-Jun-17
	Project Name/Number:	Purchase Order #: BL5914

Sample Information						Bottle Type					Analysis
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials Unpreserved	Glass Jar	Other	Analysis Required
SI706486 001	17-W2482	MW13	GW	21-Jun-17	741		4				Ra226 & Ra228
002	17-W2483	MW44	GW	21-Jun-17	1435		4				Ra226 & Ra228
003	17-W2484	MW70	GW	21-Jun-17	1118		4				Ra226 & Ra228
004	17-W2485	MW101	GW	21-Jun-17	1256		4				Ra226 & Ra228
005	17-W2486	MW102	GW	21-Jun-17	957		4				Ra226 & Ra228
006	17-W2487	Dup1	GW	21-Jun-17			4				Ra226 & Ra228
007	17-W2488	FB1	GW	21-Jun-17			4				Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-Jun-17	1700	Intact	Kathy Boyo	6-27-17	22.6
2.						22.0

3 coolers
21.0



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: AW13
Sampling Personal: [Signature]

Weather Conditions: Temp: 60 °F Wind: NOS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	29.33	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	29.86	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI:	20
Duplicate Sample ID:	Pur 1	Pumping Rate:	100 mL/min
Purge Date:	21 Jun 17	Time Purging Began:	0701 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	21 Jun 17	Time of Sampling:	0741 am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric		

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	6706	10.31	10597	6.99	6.89	261.3	3.41	29.49	500.0	Clear
2	0711	10.29	10516	6.96	5.43	259.5	2.66	29.71	500.0	Clear
3	0716	10.26	10492	6.95	4.88	255.2	1.92	29.80	500.0	Clear
4	0721	10.07	10489	6.85	4.98	254.6	5.09	29.82	500.0	Clear
5	0726	10.07	10489	6.89	5.11	232.4	12.6	29.83	500.0	Clear
6	0731	10.11	10492	6.88	5.25	215.7	14.8	29.82	500.0	Clear
7	0736	10.05	10503	6.88	5.37	213.6	14.7	29.87	500.0	Clear
8	0741	10.13	10510	6.88	5.41	201.3	13.9	29.89	500.0	Clear
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 44
Sampling Personal: Jerry Meyer

Weather Conditions: Temp: 75 °F Wind: N 5-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	26.16	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	—	
Water Level After Sample:	26.30	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	21 June 17	Time Purging Began:	1415	am/pm
Well Purged Dry?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry:	—	am/pm
Sample Date:	21 June 17	Time of Sampling:	1435	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			
	250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ #	Time									
1	1420	14.61	9291	6.57	7.06	149.0	5.44	26.28	500.0	Clear
2	1425	14.80	9272	6.55	3.12	149.2	4.83	26.25	500.0	Clear
3	1430	14.62	9293	6.55	3.07	150.1	2.86	26.25	500.0	Clear
4	1435	14.17	9287	6.54	3.03	151.4	2.01	26.26	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2000.0 mL



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 70
Sampling Personal: Jerry P. [Signature]

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

Well Information

Well Locked?	Yes <input checked="" type="radio"/> No	
Well Labeled?	Yes <input checked="" type="radio"/> No	
Casing Straight?	Yes <input checked="" type="radio"/> No	
Grout Seal Intact?	Yes <input checked="" type="radio"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:		2"
Water Level Before Purge:	20.32	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:		ft
Water Level After Sample:	22.00	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 sec.
Dedicated Equip?:	Yes <input checked="" type="radio"/> No	Recover: 55 sec.
Duplicate Sample?:	Yes No	PSI: 20
Duplicate Sample ID:		Pumping Rate: 100 mL/min
Purge Date:	21 Jun 17	Time Purging Began: 10:55 10:53 am/pm
Well Purged Dry?:	Yes No	Time Purged Dry: am/pm
Sample Date:	21 Jun 17	Time of Sampling: 11:18 am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric	

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
1	10:58	13.18	4602	6.98	6.16	53.4	0.37	20.96	500.0	clear
2	11:03	12.58	4593	6.94	7.42	63.4	0.33	21.28	500.0	clear
3	11:08	12.52	4603	6.94	7.79	66.9	0.24	21.46	500.0	clear
4	11:13	13.81	4588	6.95	7.85	68.7	0.18	21.55	500.0	clear
5	11:18	13.73	4603	6.94	7.98	70.9	0.32	21.56	500.0	clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500.0 mL

Comments:



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 101
Sampling Personal: Jerry [Signature]

Weather Conditions: Temp: 70°F Wind: N 05-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	36.30	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	39.70	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	21 June 17	Time Purging Began:	1226	am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	21 June 17	Time of Sampling:	1256	am/pm
Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1231	15.08	4887	6.80	4.40	81.5	9.44	37.06	500.0	Clear
2	1236	14.32	4879	6.71	3.78	21.0	13.7	37.45	500.0	Clear
3	1241	13.93	4873	6.70	3.90	9.8	16.9	37.79	500.0	Clear
4	1246	14.25	4872	6.69	4.13	2.7	13.0	38.26	500.0	Clear
5	1251	14.30	4854	6.69	4.50	1.1	10.8	38.68	500.0	Clear
6	1256	14.53	4854	6.68	4.52	0.9	10.1	38.82	500.0	Clear
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 3000.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 102
Sampling Personal: Jerry Day

Weather Conditions: Temp: 65 °F Wind: N05-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Casing Straight?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	<u>16.39</u>	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:		ft
Water Level After Sample:	<u>19.11</u>	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings
Sampling Method:	<u>Bladder</u>	Purge: <u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Recover: <u>55</u> sec.
Duplicate Sample?:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	PSI: <u>15</u>
Duplicate Sample ID:		Pumping Rate: <u>100</u> mL/min
Purge Date:	<u>21 Jun 17</u>	Time Purging Began: <u>0917</u> am/pm
Well Purged Dry?:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>21 Jun 17</u>	Time of Sampling: <u>0957</u> am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric	

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	0932	11.68	8637	6.78	4.45	-13.4	32.5	17.10	500.0	Clear
2	0937	11.32	7833	6.73	5.71	-26.1	2.93	17.75	500.0	Clear
3	0942	11.43	7645	6.73	6.10	-25.0	1.62	17.81	500.0	Clear
4	0947	11.46	7397	6.73	6.48	-25.9	0.88	18.03	500.0	Clear
5	0952	11.38	7194	6.73	6.33	-27.1	0.74	18.12	500.0	Clear
6	0957	11.48	7109	6.73	6.50	-28.0	68.0*	18.21	500.0	Clear
7						0.68				
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000.0 mL

Comments:

* 21 Jun 17 +



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett	Event: June 2017	Work Order Number: 82-1681
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): Jerry Meyer

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type							Field Parameters			Analysis Required	
					1 liter Nitric								Temp (°C)	Spec. Cond.		pH
W2482	MW13	21 June 17	0741	GW	4								10.13	10510	6.88	Rad 226 & Rad 228
W2483	MW44	21 June 17	1435	GW	4								14.17	9287	6.54	
W2484	MW70	21 June 17	1118	GW	4								13.73	4603	6.94	
W2485	MW101	21 June 17	1256	GW	4								14.53	4854	6.68	
W2486	MW102	21 June 17	0957	GW	4								11.48	7109	6.73	
W2487	Dup 1	21 June 17	NA	GW	4								-	-	-	
W2488	FB 1	21 June 17	NA	W	4								-	-	-	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
	21 June 17 1705	Log In Walk in #2	Ambient 19.6 TM562 / TM588
1			
2			

Received by:	
Name:	Date/Time
	22 June 17 8:00



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



June 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 June 21-22, 2017, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule.

All wells were located and were found to be in generally good condition. The wells for CCR were purged and sampled using a dedicated bladder pump and BARR's SOP for low flow purging and sampling. Sampling was also collected for the NDDH list of analysis. 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



MVTI Laboratories Inc.
FIELD DATA REPORT

MDU Heskett
GROUNDWATER SAMPLING

Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WO# CCR RadChem
 82-1676 82-1681
 82-1683 82-1685

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	pH	Turbidity NTU	SAMPLE APPEARANCE OR COMMENT
2-90	22-Jun-17	13:33	22-Jun-17	13:58	1686.60	1665.63	20.97	21.31	2500.0	Bladder	10.50	7504	6.87	0.29	clear
3-90	22-Jun-17	11:40	22-Jun-17	12:00	1686.01	1667.33	18.68	18.78	2000.0	Bladder	9.88	5033	6.75	1.12	clear
13	21-Jun-17	7:01	21-Jun-17	7:41	1724.98	1695.65	29.33	29.86	4000.0	Bladder	10.13	10510	6.88	13.90	clear
33	22-Jun-17	10:20	22-Jun-17	10:45	1717.91	1676.50	41.41	41.60	2500.0	Bladder	11.04	5054	6.49	2.63	clear
70	21-Jun-17	10:53	21-Jun-17	11:18	1706.36	1686.04	20.32	22.00	2500.0	Bladder	13.73	4603	6.94	0.32	clear
80R	22-Jun-17	8:57	22-Jun-17	9:17	NA	NA	14.40	14.65	2000.0	Bladder	10.40	5756	7.05	0.38	clear
44R	21-Jun-17	14:15	21-Jun-17	14:35	NA	NA	26.16	26.30	2000.0	Bladder	14.17	9287	6.54	2.01	clear
101	21-Jun-17	12:26	21-Jun-17	12:56	NA	NA	36.30	39.70	3000.0	Bladder	14.53	4854	6.68	10.10	clear
102	21-Jun-17	9:17	21-Jun-17	9:57	NA	NA	16.39	19.11	4000.0	Bladder	11.48	7109	6.73	0.68	clear
103	22-Jun-17	6:01	22-Jun-17	6:21	NA	NA	30.88	32.87	2000.0	Bladder	9.06	5015	6.59	0.58	clear
104	22-Jun-17	14:55	22-Jun-17	15:15	NA	NA	13.92	14.21	2000.00	Bladder	11.82	14032.00	6.88	1.01	clear
105	22-Jun-17	7:22	22-Jun-17	8:02	NA	NA	12.94	13.18	4000.0	Bladder	9.16	6790	6.65	2.37	clear
1-90	22-Jun-17	16:07	20-Apr-17	16:27	1675.86	1664.62	11.24	11.35	2000.0	Bladder	10.72	9375	6.78	0.45	clear



CASE NARRATIVE – AMENDED 7 AUGUST 2017 (Case Narrative)

MVTL Lab Reference No/SDG: 201782-1683
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2497 through 17-W2505
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include samples 2-90, 3-90, MW33, MW80R, MW103, MW104, MW105, Dup2, and FB2.

I. RECEIPT

- All samples were received at the laboratory on 23 Jun 2017 at 823.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 1.7°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.



CASE NARRATIVE – AMENDED 7 AUGUST 2017 (Case Narrative)

MVTL Lab Reference No/SDG: 201782-1683
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2497 through 17-W2505
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).
 - For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
 - One selenium matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.

V. REPORTING

- Per email dated 7 Aug 2017 from Terri Olson with Barr Engineering, the case narrative was amended to remove an erroneous statement regarding 2-90. In addition, the case narrative was corrected to fix an incorrect date/time of receipt as well as an incorrect temperature at receipt.
- Per email dated 7 Aug 2017 from Terri Olson with Barr Engineering, the sample identification listed on the COC and reports for MW80 was changed to MW80R.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 7 Aug 17
Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From: Terri A. Olson <TOlson@barr.com>
Sent: Monday, August 07, 2017 8:22 AM
To: Claudette Carroll
Cc: Barr Data Management; Tonia D. O'Brien
Subject: RE: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

Another item on this report, the case narrative has a statement about sample 2-90 not being analyzed but it was. I believe this was not overwritten from the April event. This same issue is in the NDDH report.

Thank-you,

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

resourceful. naturally.

BARR

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From: Terri A. Olson
Sent: Monday, August 07, 2017 8:19 AM
To: 'Claudette Carroll' <ccarroll@mvtl.com>
Cc: Barr Data Management <BarrDM@barr.com>; Tonia D. O'Brien <tobrien@barr.com>
Subject: RE: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

Hi Claudette,

For CCR report 201782-1683, Section I. under the case narrative lists the incorrect date and time received and the incorrect temperature upon receipt. It looks like the April data wasn't overwritten. Also, well MW80 should be listed as MW80R.

I haven't reviewed the NDDH report yet but the receipt information appears to be correct. The MW80 will need to be revised but please hold on this until I have completed my review.

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: Wednesday, July 12, 2017 4:14 PM

To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Julie Crispin <jcrispin@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>

Subject: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

Hello all,

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

Regards,
Claudette



**Minnesota Valley Testing
Laboratories, Inc.**

Providing Analytical Excellence Since 1951

ccarroll@mvtl.com

701-258-9720



Quality Control Report

Lab IDs: 17-W2497 to 17-W2505

Project: MDU Heskett - CCR

Work Order: 201782-1683

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 - Total mg/l	0.1000	98	80-120	0.400	17W2438q	< 0.001	0.3906	98	75-125	0.3906	0.4090	102	4.6	20	-	-	< 0.001
	0.1000	101	80-120	0.400	17W2476q	< 0.001	0.4132	103	75-125	0.4132	0.4384	110	5.9	20	-	-	< 0.001
				0.400	17W2497q	< 0.001	0.4158	104	75-125	0.4158	0.4412	110	5.9	20	-	-	
				0.400	17W2504q	< 0.001	0.4212	105	75-125	0.4212	0.4496	112	6.5	20	-	-	
Arsenic - Total mg/l	0.1000	96	80-120	0.400	17W2438q	< 0.002	0.3900	98	75-125	0.3900	0.4102	103	5.0	20	-	-	< 0.002
	0.1000	98	80-120	0.400	17W2476q	< 0.002	0.4276	107	75-125	0.4276	0.4398	110	2.8	20	-	-	< 0.002
				0.400	17W2497q	< 0.002	0.4178	104	75-125	0.4178	0.4384	110	4.8	20	-	-	
				0.400	17W2504q	< 0.002	0.4142	104	75-125	0.4142	0.4572	114	9.9	20	-	-	
Barium - Total mg/l	0.1000	92	80-120	0.400	17W2438q	0.0374	0.4064	92	75-125	0.4064	0.4048	92	0.4	20	-	-	< 0.002
	0.1000	95	80-120	0.400	17W2476q	0.0162	0.3808	91	75-125	0.3808	0.4050	97	6.2	20	-	-	< 0.002
				0.400	17W2497q	0.0085	0.3726	91	75-125	0.3726	0.4028	99	7.8	20	-	-	
				0.400	17W2504q	0.0111	0.3788	92	75-125	0.3788	0.4268	104	11.9	20	-	-	
Beryllium - Total mg/l	0.1000	107	80-120	0.400	17-W2438	< 0.0005	0.4078	102	75-125	0.4078	0.4176	104	2.4	20	-	-	< 0.0005
	0.1000	113	80-120	0.400	17-W2476	< 0.0005	0.4136	103	75-125	0.4136	0.4142	104	0.1	20	-	-	< 0.0005
				0.400	17-W2497	< 0.0005	0.4284	107	75-125	0.4284	0.4384	110	2.3	20	-	-	
				0.400	17-W2504	< 0.0005	0.4098	102	75-125	0.4098	0.4274	107	4.2	20	-	-	
Boron - Total mg/l	0.40	105	80-120	0.400	17-W2497	0.35	0.78	108	75-125	0.78	0.79	110	1.3	20	-	-	< 0.1
				0.400	17-W2504	0.10	0.49	98	75-125	0.49	0.52	105	5.9	20	-	-	< 0.1
Cadmium - Total mg/l	0.1000	102	80-120	0.400	17W2438q	< 0.0005	0.3932	98	75-125	0.3932	0.4032	101	2.5	20	-	-	< 0.0005
	0.1000	104	80-120	0.400	17W2476q	< 0.0005	0.4002	100	75-125	0.4002	0.4222	106	5.4	20	-	-	< 0.0005
				0.400	17W2497q	< 0.0005	0.4108	103	75-125	0.4108	0.4280	107	4.1	20	-	-	
				0.400	17W2504q	< 0.0005	0.4100	102	75-125	0.4100	0.4350	109	5.9	20	-	-	
Calcium - Total mg/l	20.0	104	80-120	500	17W2497q	488	960	94	75-125	960	945	91	1.6	20	-	-	< 1
	20.0	108	80-120	500	17W2504q	530	980	90	75-125	980	975	89	0.5	20	-	-	< 1
				100	17W2518q	4.0	104	100	75-125	104	105	101	1.0	20	-	-	< 1
															-	-	< 1

Quality Control Report

Lab IDs: 17-W2497 to 17-W2505

Project: MDU Heskett - CCR

Work Order: 201782-1683

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Chloride mg/l	30.0	86	80-120	60.0	17-W2490	33.4	97.2	106	80-120	97.2	97.6	107	0.4	20	-	-	< 1
	30.0	88	80-120	60.0	17-W2661	5.3	58.8	89	80-120	58.8	56.8	86	3.5	20	-	-	< 1
				600	17-M1596	222	758	89	80-120	758	803	97	5.8	20	-	-	< 1
Chromium - Total mg/l	0.1000	96	80-120	0.400	17W2438q	< 0.002	0.3546	89	75-125	0.3546	0.3712	93	4.6	20	-	-	< 0.002
	0.1000	97	80-120	0.400	17W2476q	< 0.002	0.3914	98	75-125	0.3914	0.3994	100	2.0	20	-	-	< 0.002
				0.400	17W2497q	< 0.002	0.3774	94	75-125	0.3774	0.3978	99	5.3	20	-	-	
				0.400	17W2504q	< 0.002	0.3702	93	75-125	0.3702	0.3968	99	6.9	20	-	-	
Cobalt - Total mg/l	0.1000	95	80-120	0.400	17W2438q	< 0.002	0.3658	91	75-125	0.3658	0.3772	94	3.1	20	-	-	< 0.002
	0.1000	95	80-120	0.400	17W2476q	< 0.002	0.3864	97	75-125	0.3864	0.4010	100	3.7	20	-	-	< 0.002
				0.400	17W2497q	< 0.002	0.3782	95	75-125	0.3782	0.3974	99	5.0	20	-	-	
				0.400	17W2504q	< 0.002	0.3740	94	75-125	0.3740	0.4056	101	8.1	20	-	-	
Fluoride mg/l	0.50	104	90-110	0.500	17-W2478	0.24	0.73	98	80-120	0.73	0.74	100	1.4	20	-	-	< 0.1
	0.50	106	90-110	0.500	17-W2497	0.97	1.37	80	80-120	1.37	1.38	82	0.7	20	-	-	< 0.1
	0.50	106	90-110	0.500	17-W2503	0.27	0.70	86	80-120	0.70	0.70	86	0.0	20	-	-	< 0.1
Lead - Total mg/l	0.1000	93	80-120	0.400	17W2438q	< 0.0005	0.3550	89	75-125	0.3550	0.3568	89	0.5	20	-	-	< 0.0005
	0.1000	97	80-120	0.400	17W2476q	< 0.0005	0.3660	92	75-125	0.3660	0.3908	98	6.6	20	-	-	< 0.0005
				0.400	17W2497q	< 0.0005	0.3664	92	75-125	0.3664	0.3912	98	6.5	20	-	-	
				0.400	17W2504q	< 0.0005	0.3736	93	75-125	0.3736	0.4054	101	8.2	20	-	-	
Lithium - Total mg/l	0.40	108	80-120	0.400	17-W2476	0.73	1.10	92	75-125	1.10	1.10	92	0.0	20	-	-	< 0.1
	0.40	108	80-120	0.400	17-W2497	1.01	1.50	122	75-125	1.50	1.41	100	6.2	20	-	-	< 0.1
				0.400	17-W2504	0.23	0.67	110	75-125	0.67	0.63	100	6.2	20	-	-	< 0.1

Quality Control Report

Lab IDs: 17-W2497 to 17-W2505

Project: MDU Heskett - CCR

Work Order: 201782-1683

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
Mercury - Total mg/l	0.0020	100	85-115	0.002	A28572	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	< 0.0002
	0.0020	100	85-115	0.002	17-W2499	< 0.0002	0.0020	100	70-130	0.0020	0.0019	95	5.1	20	-	-	< 0.0002
				0.002	17-W2505	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	
Molybdenum - Total mg/l	0.1000	99	80-120	0.400	17W2438q	< 0.002	0.3682	92	75-125	0.3682	0.3964	99	7.4	20	-	-	< 0.002
	0.1000	96	80-120	0.400	17W2476q	< 0.002	0.3906	98	75-125	0.3906	0.4224	106	7.8	20	-	-	< 0.002
				0.400	17W2497q	< 0.002	0.3920	98	75-125	0.3920	0.4302	108	9.3	20	-	-	
				0.400	17W2504q	< 0.002	0.3838	96	75-125	0.3838	0.4156	104	8.0	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	7.1	7.1	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.0	7.1	-	1.4	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.4	7.4	-	0.0	20	-	-	-
Selenium - Total mg/l	0.1000	111	80-120	0.400	17W2438q	< 0.005	0.4222	106	75-125	0.4222	0.4440	111	5.0	20	-	-	< 0.002
	0.1000	112	80-120	0.400	17W2476q	0.1768	0.6154	110	75-125	0.6154	0.6206	111	0.8	20	-	-	< 0.002
				0.400	17W2497q	0.1814	0.6312	112	75-125	0.6312	0.6574	119	4.1	20	-	-	
				0.400	17W2504q	0.1719	0.6092	109	75-125	0.6092	0.6808	127	11.1	20	-	-	
Sulfate mg/l	100	104	80-120	500	17-W2493	615	1080	93	80-120	1080	1060	89	1.9	20	-	-	< 5
	100	110	80-120	100	17-W2505	< 5	99.4	99	80-120	99.4	99.1	99	0.3	20	-	-	< 5
Thallium - Total mg/l	0.1000	92	80-120	0.400	17W2438q	< 0.0005	0.3520	88	75-125	0.3520	0.3568	89	1.4	20	-	-	< 0.0005
	0.1000	97	80-120	0.400	17W2476q	< 0.0005	0.3634	91	75-125	0.3634	0.3808	95	4.7	20	-	-	< 0.0005
				0.400	17W2497q	< 0.0005	0.3616	90	75-125	0.3616	0.3858	96	6.5	20	-	-	
				0.400	17W2504q	< 0.0005	0.3740	94	75-125	0.3740	0.4000	100	6.7	20	-	-	
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	6440	6370	-	1.1	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	4510	4590	-	1.8	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	< 10	< 10	-	0.0	*	-	-	

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

Approved by: C. [Signature]
 12 JUL 17



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2498
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17 12:00
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: 3-90

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.75	units	NA	SM 4500 H+ B	22 Jun 17 12:00	JSM
pH	* 7.3	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	9.88	Degrees C	NA	SM 2550B	22 Jun 17 12:00	JSM
Conductivity - Field	5033	umhos/cm	1	EPA 120.1	22 Jun 17 12:00	JSM
Fluoride	0.13	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	2870	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	36.8	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 12:19	EV
Total Dissolved Solids	4590	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	535	mg/l	1.0	6010	30 Jun 17 10:04	SZ
Lithium - Total	0.22	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0107	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1697	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll

12 Jul 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix

= Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2499
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17 10:45
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW33

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.49	units	NA	SM 4500 H+ B	22 Jun 17 10:45	JSM
pH	* 7.0	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	11.0	Degrees C	NA	SM 2550B	22 Jun 17 10:45	JSM
Conductivity - Field	5054	umhos/cm	1	EPA 120.1	22 Jun 17 10:45	JSM
Fluoride	0.24	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	3120	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	10.7	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 12:19	EV
Total Dissolved Solids	4760	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	452	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.71	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.34	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0110	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll ^{CC} 12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

Amended 7 Aug 17 (Sample ID) - CCR

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

Report Date: 10 Jul 17
Lab Number: 17-W2500
Work Order #: 82-1683
Account #: 002800
Date Sampled: 22 Jun 17 9:17
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW80R

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	7.05	units	NA	SM 4500 H+ B	22 Jun 17 9:17	JSM
pH	* 7.6	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	10.4	Degrees C	NA	SM 2550B	22 Jun 17 9:17	JSM
Conductivity - Field	5756	umhos/cm	1	EPA 120.1	22 Jun 17 9:17	JSM
Fluoride	0.31	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	3140	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	155	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	5100	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	290	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.77	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.30	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0095	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	0.0033	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.0660	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

Approved by: Claudette K. Carroll ^{CC} 7 Aug 17
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2501
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17 6:21
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW103

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.59	units	NA	SM 4500 H+ B	22 Jun 17 6:21	JSM
pH	* 7.2	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	9.06	Degrees C	NA	SM 2550B	22 Jun 17 6:21	JSM
Conductivity - Field	5015	umhos/cm	1	EPA 120.1	22 Jun 17 6:21	JSM
Fluoride	0.14	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	2910	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	142	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	4870	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	555	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.59	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0070	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	0.0030	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.2696	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll

CC
12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix
 ! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
Lab Number: 17-W2502
Work Order #: 82-1683
Account #: 002800
Date Sampled: 22 Jun 17 15:15
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW104

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.88	units	NA	SM 4500 H+ B	22 Jun 17 15:15	JSM
pH	* 7.5	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	11.8	Degrees C	NA	SM 2550B	22 Jun 17 15:15	JSM
Conductivity - Field	14032	umhos/cm	1	EPA 120.1	22 Jun 17 15:15	JSM
Fluoride	0.53	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	11100	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	98.4	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	16600	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	439	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	2.20	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.84	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0067	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	0.0023	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.1432	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll ^{CC} 12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2503
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17 8:02
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: MW105

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.65	units	NA	SM 4500 H+ B	22 Jun 17 8:02	JSM
pH	* 7.3	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Temperature - Field	9.16	Degrees C	NA	SM 2550B	22 Jun 17 8:02	JSM
Conductivity - Field	6790	umhos/cm	1	EPA 120.1	22 Jun 17 8:02	JSM
Fluoride	0.27	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	4160	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	348	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	6280	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	392	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	1.06	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	0.36	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0176	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll ^{CC} 12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2504
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: DUP 2

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH	* 7.4	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Fluoride	0.13	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	2930	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	36.9	mg/l	1.0	SM4500-CL-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	4510	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	530	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.23	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0111	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.1719	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

Approved by:

Claudette K. Carroll

CC
12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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 ! = Due to sample quantity

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 10 Jul 17
 Lab Number: 17-W2505
 Work Order #: 82-1683
 Account #: 002800
 Date Sampled: 22 Jun 17
 Date Received: 23 Jun 17 8:23
 Sampled By: MVTL Field Services

Project Name: MDU Heskett
 Sample Description: FB2

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH	* 6.2	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	< 1	mg/l	1.0	SM4500-CL-E	7 Jul 17 9:23	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	< 1	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

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

Approved by:

Claudette K. Carroll ^{CC} 12 JUL 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Jerry May

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration						
Date:	21 June 17		Time: 0659			
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	17.79	6.97	7.00	6.95-7.05	-21.1	0 +/- 50
Buffer 10	17.60	10.01	10.00	9.95-10.05	-198.0	-180 +/- 50
Conductivity						Check
Buffer 10000	18.08	10098	10001	±10%	Buffer 5000	5002
ORP						
231 mV @ 25C	18.41	235.3	235.7	±10 mV		
DO					Barometric Pressure (mm Hg)	
	17.27	78.8	93.4		mg/L	755
		replaced membrane				

Pre Site Calibration						
Date:	22 June 17		Time: 0600			
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	18.45	7.02	7.00	6.95-7.05	-22.2	0 +/- 50
Buffer 10	19.04	9.98	10.00	9.95-10.05	-198.5	-180 +/- 50
Conductivity						Check
Buffer 10000	17.45	10049	10000	±10%	Buffer 5000	5004
ORP						
231 mV @ 25C	17.88	235.8	235.7	±10 mV		
DO					Barometric Pressure (mm Hg)	
	16.49	101.4%	99.2%		mg/L	754

Post Site Check		
Time:	1700	
pH	Temp °C	Reading
Buffer 7	18.01	7.01
Conductivity		
Buffer 5000	18.13	4989

Post Site Check		
Time:	1710	
pH	Temp °C	Reading
Buffer 7	18.55	7.02
Conductivity		
Buffer 5000	18.13	4985



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

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

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

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>20.97</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>21.31</u>	ft
Measurement Method:	<u>Electric Water Level Indicator</u>	

Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings	
Sampling Method:	<u>Bladder</u>	Purge:	<u>5</u> sec.
Dedicated Equip?:	<u>Yes</u> No <input type="checkbox"/>	Recover:	<u>55</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI:	<u>20</u>
Duplicate Sample ID:	<u>—</u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Jun 17</u>	Time Purging Began:	<u>1333</u> am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>22 Jun 17</u>	Time of Sampling:	<u>1358</u> am/pm
Bottle List:	<u>1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric</u> <u>250 mL Sulfuric</u>		

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
SEQ #	Time									
1	1338	10.67	7858	6.90	8.27	120.0	0.52	21.35	500.0	Clear
2	1343	11.03	7569	6.88	7.33	125.1	0.27	21.31	500.0	Clear
3	1348	10.91	7477	6.87	6.57	128.9	0.26	21.32	500.0	Clear
4	1353	10.80	7509	6.87	6.68	130.7	0.27	21.33	500.0	Clear
5	1358	10.50	7504	6.87	6.62	132.3	0.29	21.35	500.0	Clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

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

Weather Conditions: Temp: 60 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>18.68</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>18.78</u>	ft
Measurement Method:	<u>Electric Water Level Indicator</u>	

Sampling Information

Purging Method:	<u>Bladder</u>		Control Settings	
Sampling Method:	<u>Bladder</u>		Purge:	<u>5</u> sec.
Dedicated Equip?:	<u>Yes</u>	No <input type="checkbox"/>	Recover:	<u>55</u> sec.
Duplicate Sample?:	<u>Yes</u>	No <input type="checkbox"/>	PSI:	
Duplicate Sample ID:	<u>Dup 2</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Jun 17</u>	Time Purging Began:	<u>1140</u>	<u>am/pm</u>
Well Purged Dry?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry:	<u>—</u>	<u>am/pm</u>
Sample Date:	<u>22 Jun 17</u>	Time of Sampling:	<u>1200</u>	<u>am/pm</u>
Bottle List:	<u>1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</u>			
	<u>250 mL Sulfuric</u>			

Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
2	<u>1150</u>	<u>9.85</u>	<u>5057</u>	<u>6.74</u>	<u>4.99</u>	<u>20.6</u>	<u>1.38</u>	<u>18.83</u>	<u>500.0</u>	<u>Clear</u>
3	<u>1155</u>	<u>10.13</u>	<u>5039</u>	<u>6.74</u>	<u>5.23</u>	<u>16.9</u>	<u>0.61</u>	<u>18.80</u>	<u>500.0</u>	<u>Clear</u>
4	<u>1200</u>	<u>9.88</u>	<u>5033</u>	<u>6.75</u>	<u>5.16</u>	<u>21.1</u>	<u>1.12</u>	<u>18.78</u>	<u>500.0</u>	<u>Clear</u>
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000.0 mL

Comments: Ants were crawling all over well casing



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 33
Sampling Personal: Jerry Heskett

Weather Conditions: Temp: 60 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	<input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	No	
Casing Straight?	<input checked="" type="radio"/> Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	41.41		ft
Total Well Depth:	—		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	41.60		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	No	Recover:	55 sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	30
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 June 17	Time Purging Began:	1020	am/pm
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	22 June 17	Time of Sampling:	1045	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)		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	1025	11.29	5581	6.65	5.80	-34.1	26.9	41.65	500.0	clear
2	1030	11.31	5311	6.52	5.30	-10.9	7.78	41.62	500.0	clear
3	1035	11.27	5170	6.52	5.98	4.1	4.51	41.60	500.0	clear
4	1040	10.95	5084	6.50	5.86	13.6	2.58	41.58	500.0	clear
5	1045	11.04	5054	6.49	5.73	19.6	2.63	41.60	500.0	clear
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2500.0 mL



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 80
Sampling Personal: Jeremy Heskett

Weather Conditions: Temp: 60 °F Wind: N@S-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	14.40		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	14.65		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	15
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 Jun 17	Time Purging Began:	0857	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	22 Jun 17	Time of Sampling:	0917	am/pm
Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	0902	10.10	5791	7.07	4.96	186.8	0.41	14.58	500.0	clear
2	0907	9.75	5761	7.06	4.57	190.4	0.35	14.63	500.0	clear
3	0912	10.55	5769	7.05	4.50	190.6	0.36	14.65	500.0	clear
4	0917	10.40	5756	7.05	4.56	191.1	0.38	14.62	500.0	clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2600.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 103
Sampling Personal: *Jerry Eley*

Weather Conditions: Temp: 60 °F Wind: NWS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	30.88		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	32.87		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	25
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 June 17	Time Purging Began:	0601	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	22 June 17	Time of Sampling:	0621	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	0606	9.31	5025	6.68	8.64	253.6	0.99	31.75	500.0	Clear
2	0611	9.26	5019	6.64	4.72	253.0	0.92	32.25	500.0	Clear
3	0616	9.13	5017	6.60	4.47	252.5	0.60	32.31	500.0	Clear
4	0621	9.06	5015	6.59	4.43	249.9	0.58	32.36	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2000.0 mL



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
 Event: 2017
 Sample ID: 104
 Sampling Personal: Jerry Meyer

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

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	13.92	ft
Total Well Depth:	— ft	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	14.21	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>5</u> sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: <u>55</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: <u>10</u>
Duplicate Sample ID:	—	Pumping Rate: <u>100</u> mL/min
Purge Date:	<u>22 Jun 17</u>	Time Purging Began: <u>1455</u> am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: <u>—</u> am/pm
Sample Date:	<u>22 Jun 17</u>	Time of Sampling: <u>1515</u> am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric	

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
										SEQ #
									clear, slightly turbid, turbid	
1	1500	12.17	13978	6.92	4.53	157.3	5.40	14.28	500.0	Clear
2	1505	12.39	14000	6.90	3.22	150.9	2.17	14.18	500.0	Clear
3	1510	11.81	14045	6.88	3.62	146.0	1.31	14.35	500.0	Clear
4	1515	11.82	14032	6.88	3.66	143.7	1.01	14.30	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000.0 mL

Comments:



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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: 105
Sampling Personal: Jerry P. [Signature]

Weather Conditions: Temp: 60 °F Wind: NWS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	12.94	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:		ft
Water Level After Sample:	13.18	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>5</u> sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: <u>55</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: <u>10</u>
Duplicate Sample ID:		Pumping Rate: <u>100</u> mL/min
Purge Date:	<u>22 June 17</u>	Time Purging Began: <u>0722</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: _____ am/pm
Sample Date:	<u>22 June 17</u>	Time of Sampling: <u>0802</u> am/pm
Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric	

Field Measurements

SEQ #	Stabilization (3 consecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
2	0732	8.96	5578	6.73	3.33	205.9	3.18	13.21	500.0	Clear
3	0737	8.95	5668	6.72	3.63	203.3	2.69	13.22	500.0	Clear
4	0742	8.94	6113	6.70	3.55	201.4	1.73	13.25	500.0	Clear
5	0747	9.25	6290	6.68	3.55	199.2	1.74	13.21	500.0	Clear
6	0752	9.08	6534	6.67	3.78	197.3	1.49	13.24	500.0	Clear
7	0757	9.09	6682	6.66	3.64	195.5	1.84	13.24	500.0	Clear
8	0802	9.16	6790	6.65	3.77	193.6	2.37	13.26	500.0	Clear
9										
10										

Stabilized: Yes No

Total Volume Removed: 4000.0 mL

Comments:



Laboratories, Inc.

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

Chain of Custody Record

Project Name: MDU Heskett	Event: June 2017	Work Order Number: 82-1683
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): Jeremy [Signature]

Lab Number	Sample ID	Date	Time	Sample Type	Bottle Type				Field Parameters			Analysis Required
					1 liter	500mL Nitric	500mL Nitric (filtered)	250 mL Sulfuric	Temp (°C)	Spec. Cond.	pH	
W2497	2-90	22 June 17	1358	GW	X	X	X	X	10.50	5033	6.87	MDU List C & List AA
W2498	3-90	22 June 17	1200	GW	X	X	X	X	9.88	5033	6.75	
W2499	MW33	22 June 17	1045	GW	X	X	X	X	11.04	5054	6.49	
W2500	MW80 RLA	22 June 17	0917	GW	X	X	X	X	10.40	5756	7.05	
W2501	MW103	22 June 17	0621	GW	X	X	X	X	9.06	5015	6.59	
W2502	MW104	22 June 17	1515	GW	X	X	X	X	11.82	14032	6.88	
W2503	MW105	22 June 17	0802	GW	X	X	X	X	9.16	6790	6.65	
W2504	Dup 2	22 June 17	-	GW	X	X	X	X	-	-	-	
W2505	FB2	22 June 17	-	W	X	X	X	X	-	-	-	

Comments: f 22 June 17

* - changed to MW80R per email from T. Olson w/Barr
7 Aug 17 cc

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
[Signature]	23 June 17 0823	Log In Walk In #2	201 1.7 TM562 / TM588

Received by:	
Name:	Date/Time
[Signature]	23 June 17 823



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-1685
IML Lab Reference No/SDG: S1706487
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2507 through 17-W2515
IML Laboratory Identifications: S1706487-001 through S1706487-009
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include samples like 2-90, 3-90, MW33, MW80R, MW103, MW104, MW105, Dup2, FB2.

I. RECEIPT

- All samples were received at the laboratory on 23 Jun 2017 at 0823.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 1.7°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.
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.



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-1685
IML Lab Reference No/SDG: S1706487
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR June 2017
MVTL Laboratory Identifications: 17-W2507 through 17-W2515
IML Laboratory Identifications: S1706487-001 through S1706487-009
Page 2 of 2

III. METHODS

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

IV. ANALYSIS

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

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 9 Aug 17
Claudette Carroll - MVTL Bismarck Laboratory Manager



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

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

Report Date: 7 Aug 17
Lab Number: 17-W2507
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 13:58
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: 2-90

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.87 units	NA	SM 4500 H+ B	22 Jun 17 13:58	JSM
Temperature - Field	10.5 Degrees C	NA	SM 2550B	22 Jun 17 13:58	JSM
Conductivity - Field	7504 umhos/cm	1	EPA 120.1	22 Jun 17 13:58	JSM
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			28 Jul 17	OL

Approved by: Claudette K. Carroll ^{CC} 9 Aug 17
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit
The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response
CERTIFICATION: ND # ND-00016

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions 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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Page: 2 of 9

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2508
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 12:00
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: 3-90

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.75	units	NA	SM 4500 H+ B	22 Jun 17 12:00	JSM
Temperature - Field	9.88	Degrees C	NA	SM 2550B	22 Jun 17 12:00	JSM
Conductivity - Field	5033	umhos/cm	1	EPA 120.1	22 Jun 17 12:00	JSM
Radium 226	See Attached Report				2 Aug 17	OL
Radium 228	See Attached Report				28 Jul 17	OL

Approved by: Claudette K. Carroll ^{CC} 9 Aug 17
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit
The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response
CERTIFICATION: ND # ND-00016

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions 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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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2509
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 10:45
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW33

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.49	units	NA	SM 4500 H+ B	22 Jun 17 10:45	JSM
Temperature - Field	11.0	Degrees C	NA	SM 2550B	22 Jun 17 10:45	JSM
Conductivity - Field	5054	umhos/cm	1	EPA 120.1	22 Jun 17 10:45	JSM
Radium 226	See Attached Report				2 Aug 17	OL
Radium 228	See Attached Report				28 Jul 17	OL

Approved by:

Claudette K. Carroll ^{cc} *9 Aug 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2510
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 9:17
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW80R

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	7.05	units	NA	SM 4500 H+ B	22 Jun 17	9:17	JSM
Temperature - Field	10.4	Degrees C	NA	SM 2550B	22 Jun 17	9:17	JSM
Conductivity - Field	5756	umhos/cm	1	EPA 120.1	22 Jun 17	9:17	JSM
Radium 226	See Attached Report				2 Aug 17		OL
Radium 228	See Attached Report				28 Jul 17		OL

Approved by:

Claudette K. Carroll

CC
9-Aug-17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2511
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 6:21
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW103

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.59 units	NA	SM 4500 H+ B	22 Jun 17 6:21	JSM
Temperature - Field	9.06 Degrees C	NA	SM 2550B	22 Jun 17 6:21	JSM
Conductivity - Field	5015 umhos/cm	1	EPA 120.1	22 Jun 17 6:21	JSM
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			28 Jul 17	OL

Approved by:

Claudette K. Carroll

cc
9 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2512
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 15:15
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW104

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.88 units	NA	SM 4500 H+ B	22 Jun 17 15:15	JSM
Temperature - Field	11.8 Degrees C	NA	SM 2550B	22 Jun 17 15:15	JSM
Conductivity - Field	14032 umhos/cm	1	EPA 120.1	22 Jun 17 15:15	JSM
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			29 Jul 17	OL

Approved by: Claudette K. Carroll ^{cc} 9 Aug 17
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit
The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response
CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2513
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17 8:02
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW105

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.65	units	NA	SM 4500 H+ B	22 Jun 17	8:02	JSM
Temperature - Field	9.16	Degrees C	NA	SM 2550B	22 Jun 17	8:02	JSM
Conductivity - Field	6790	umhos/cm	1	EPA 120.1	22 Jun 17	8:02	JSM
Radium 226	See Attached Report				2 Aug 17		OL
Radium 228	See Attached Report				29 Jul 17		OL

Approved by:

C
Claudette K. Carroll *9 Aug 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2514
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: DUP 2

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			29 Jul 17	OL

Approved by: Claudette K. Carroll ^{cc} 9 Aug 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17
Lab Number: 17-W2515
Work Order #: 82-1685
Account #: 002800
Date Sampled: 22 Jun 17
Date Received: 23 Jun 17 8:23
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: FB2

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			29 Jul 17	OL

Approved by:

C
Claudette K. Carroll *9 Aug 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



Date: 8/3/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201782-1685
Lab Order: S1706487

CASE NARRATIVE
Report ID: S1706487002
(Replaces S1706487001)

Samples 17-W2507 2-90, 17-W2508 3-90, 17-W2509 MW33, 17-W2510 MW80, 17-W2511 MW103, 17-W2512 MW104, 17-W2513 MW105, 17-W2514 Dup2, and 17-W2515 FB2 were received on June 27, 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.

The report, S1706487001, was revised and replaced by report S1706487002 to correct the report style to display all values.

Reviewed by:

Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-001
ClientSample ID: 17-W2507 2-90
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 1:58:00 PM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.18	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-1.2	pCi/L		2	Ga-Tech	07/28/2017 1034	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1034	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-002
ClientSample ID: 17-W2508 3-90
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 12:00:00 PM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

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

Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650 MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/02/2017 1650 MB
Radium 228	-0.4	pCi/L		2	Ga-Tech	07/28/2017 1337 MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1337 MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-003
ClientSample ID: 17-W2509 MW33
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 10:45:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
Radionuclides - Total						
Radium 226	0.2	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650 MB
Radium 228	-0.4	pCi/L		2	Ga-Tech	07/28/2017 1640 MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1640 MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-004
ClientSample ID: 17-W2510 MW80R * CL 9 Aug 17
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 9:17:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

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

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-005
ClientSample ID: 17-W2511 MW103
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 6:21:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.16	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	-1.5	pCi/L		2	Ga-Tech	07/28/2017 2246	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 2246	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-006
ClientSample ID: 17-W2512 MW104
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 3:15:00 PM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	0.8	pCi/L		2	Ga-Tech	07/29/2017 149	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	07/29/2017 149	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-007
ClientSample ID: 17-W2513 MW105
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017 8:02:00 AM
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

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

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-008
ClientSample ID: 17-W2514 Dup2
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	0.2	pCi/L		2	Ga-Tech	07/29/2017 755	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/29/2017 755	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



Sample Analysis Report

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

Date Reported 8/9/2017
Report ID S1706487002
(Replaces S1706487001)

ProjectName: 201782-1685
Lab ID: S1706487-009
ClientSample ID: 17-W2515 FB2
COC: 201782-1685

WorkOrder: S1706487
CollectionDate: 6/22/2017
DateReceived: 6/27/2017 12:40:00 PM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	-0.6	pCi/L		2	Ga-Tech	07/29/2017 1058	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/29/2017 1058	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Tom Patten
Tom Patten, Laboratory Manager



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1706487
Project: 201782-1685

Date: 8/3/2017
Report ID: S1706487002
(Replaces S1706487001)

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L			
MB-450 (07/27/17 16:14)	Analyte	RunNo:	148477	PrepDate:	07/12/17 14:00	BatchID 13495		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Total Radium 228		ND	1					

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L			
LCS-450 (07/27/17 19:17)	Analyte	RunNo:	148477	PrepDate:	07/12/17 14:00	BatchID 13495		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Total Radium 228		34	1	39.3	85.5	65.9 - 132		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L			
MS-450 (07/28/17 01:23)	Analyte	RunNo:	148477	PrepDate:	07/12/17 14:00	BatchID 13495		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Total Radium 228		41	1	39.3	ND	105	50 - 139	

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L			
MSD-450 (07/28/17 04:27)	Analyte	RunNo:	148477	PrepDate:	07/12/17 14:00	BatchID 13495		
		Result	RL	Conc	%RPD	%REC	% RPD Limits Qual	
Total Radium 228		36	1	41	13.8	91.7	20	

Radium 226 in Water -		Sample Type	MBLK		Units: pCi/L			
MB-1775 (08/02/17 16:50)	Analyte	RunNo:	148576	PrepDate:	07/26/17 0:00	BatchID 13492		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Radium 226		ND	0.2					

Radium 226 in Water -		Sample Type	LCS		Units: pCi/L			
LCS-1775 (08/02/17 16:50)	Analyte	RunNo:	148576	PrepDate:	07/26/17 0:00	BatchID 13492		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Radium 226		6.5	0.2	6.41	102	67.1 - 122		

Radium 226 in Water -		Sample Type	MS		Units: pCi/L			
MS-1775 (08/02/17 16:50)	Analyte	RunNo:	148576	PrepDate:	07/26/17 0:00	BatchID 13492		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits Qual	
Radium 226		6.5	0.2	6.41	ND	101	65 - 131	

Radium 226 in Water -		Sample Type	MSD		Units: pCi/L			
MSD-1775 (08/02/17 16:50)	Analyte	RunNo:	148576	PrepDate:	07/26/17 0:00	BatchID 13492		
		Result	RL	Conc	%RPD	%REC	% RPD Limits Qual	
Radium 226		6.7	0.2	6.5	3.74	104	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
 - S Spike Recovery outside accepted recovery limits



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

Chain of Custody Record

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

201782-1685

Company Name and Address: <u>MVTL</u> <u>2616 E Broadway</u> <u>Bismarck, ND 58501</u>	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above): <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 23-Jun-17
	Project Name/Number:	Purchase Order #: BL5915

Sample Information						Bottle Type					Analysis
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials Unpreserved	Glass Jar	Other	Analysis Required
81706487											
001	17-W2507	2-90	GW	22-Jun-17	1358		4				Ra226 & Ra228
002	17-W2508	3-90	GW	22-Jun-17	1200		4				Ra226 & Ra228
003	17-W2509	MW33	GW	22-Jun-17	1045		4				Ra226 & Ra228
004	17-W2510	MW80 R *	GW	22-Jun-17	917		4				Ra226 & Ra228
005	17-W2511	MW103	GW	22-Jun-17	621		4				Ra226 & Ra228
006	17-W2512	MW104	GW	22-Jun-17	1515		4				Ra226 & Ra228
007	17-W2513	MW105	GW	22-Jun-17	802		4				Ra226 & Ra228
008	17-W2514	Dup2	GW	22-Jun-17			4				Ra226 & Ra228
009	17-W2515	FB2	GW	22-Jun-17			4				Ra226 & Ra228

Comments: All results must be reported as a numerical value. * cc 9 Aug 17

2 coolers

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-Jun-17	1700	Intact	Kathy Boyd	6.27.17	21.6
2.				Boyd		21.4



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

Field Datasheet

Groundwater Assessment

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

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

Well Information

Well Locked?	Yes	<u>No</u>	
Well Labeled?	<u>Yes</u>	No	
Casing Straight?	<u>Yes</u>	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>20.97</u>	ft	
Total Well Depth:	<u>—</u>	ft	
Well Volume:	<u>—</u>	liters	
Depth to Top of Pump:	<u>—</u>	ft	
Water Level After Sample:	<u>21.31</u>	ft	
Measurement Method:	<u>Electric Water Level Indicator</u>		

Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings	
Sampling Method:	<u>Bladder</u>	Purge:	<u>5</u> sec.
Dedicated Equip?:	<u>Yes</u> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	Yes <u>No</u>	PSI:	<u>20</u>
Duplicate Sample ID:	<u>—</u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Jun 17</u>	Time Purging Began:	<u>1333</u> am/pm
Well Purged Dry?	Yes <u>No</u>	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>22 Jun 17</u>	Time of Sampling:	<u>1358</u> am/pm
Bottle List:	<u>1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</u>		
	<u>250 mL Sulfuric</u>		

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time								clear, slightly turbid, turbid	
1	<u>1338</u>	<u>10.67</u>	<u>7858</u>	<u>6.90</u>	<u>8.27</u>	<u>120.0</u>	<u>0.52</u>	<u>21.35</u>	<u>500.0</u>	<u>Clear</u>
2	<u>1343</u>	<u>11.03</u>	<u>7569</u>	<u>6.88</u>	<u>7.33</u>	<u>125.1</u>	<u>0.27</u>	<u>21.31</u>	<u>500.0</u>	<u>Clear</u>
3	<u>1348</u>	<u>10.91</u>	<u>7477</u>	<u>6.87</u>	<u>6.57</u>	<u>128.9</u>	<u>0.26</u>	<u>21.32</u>	<u>500.0</u>	<u>Clear</u>
4	<u>1353</u>	<u>10.80</u>	<u>7509</u>	<u>6.87</u>	<u>6.68</u>	<u>130.7</u>	<u>0.27</u>	<u>21.33</u>	<u>500.0</u>	<u>Clear</u>
5	<u>1358</u>	<u>10.50</u>	<u>7504</u>	<u>6.87</u>	<u>6.62</u>	<u>132.3</u>	<u>0.29</u>	<u>21.35</u>	<u>500.0</u>	<u>Clear</u>
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500.0 mL

Comments:



Field Datasheet

Groundwater Assessment

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

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

Weather Conditions: Temp: 60 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>18.68</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>18.78</u>	ft
Measurement Method:	<u>Electric Water Level Indicator</u>	

Sampling Information

Purging Method:	<u>Bladder</u>		Control Settings	
Sampling Method:	<u>Bladder</u>		Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	PSI:	
Duplicate Sample ID:	<u>Dup 2</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 June 17</u>	Time Purging Began:	<u>1140</u>	<u>am/pm</u>
Well Purged Dry?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Time Purged Dry:	<u>—</u> <u>am/pm</u>
Sample Date:	<u>22 June 17</u>	Time of Sampling:	<u>1200</u>	<u>am/pm</u>
Bottle List:	<u>1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</u>			
	<u>250 mL Sulfuric</u>			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ #	Time								
1	<u>1145</u>	<u>10.04</u>	<u>5033</u>	<u>6.80</u>	<u>5.22</u>	<u>39.8</u>	<u>18.75</u>	<u>500.0</u>	<u>Clear</u>
2	<u>1150</u>	<u>9.85</u>	<u>5057</u>	<u>6.74</u>	<u>4.99</u>	<u>20.6</u>	<u>18.83</u>	<u>500.0</u>	<u>Clear</u>
3	<u>1155</u>	<u>10.13</u>	<u>5039</u>	<u>6.74</u>	<u>5.23</u>	<u>16.9</u>	<u>18.80</u>	<u>500.0</u>	<u>Clear</u>
4	<u>1200</u>	<u>9.88</u>	<u>5033</u>	<u>6.75</u>	<u>5.16</u>	<u>21.1</u>	<u>18.78</u>	<u>500.0</u>	<u>Clear</u>
5									
6									
7									
8									
9									
10									

Stabilized: Yes No

Total Volume Removed: 2000.0 mL

Comments:

Ants were crawling all over well casing



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 33
Sampling Personal: Jerry Payne

Weather Conditions: Temp: 60 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	41.41	ft	
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	41.60	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes	No	Recover:	55 sec.
Duplicate Sample?:	Yes	No	PSI:	30
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 June 17	Time Purging Began:	1020	am/pm
Well Purged Dry?	Yes	No	Time Purged Dry:	— am/pm
Sample Date:	22 June 17	Time of Sampling:	1045	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
SEQ #	Time									
1	1025	11.29	5581	6.65	5.80	-34.1	26.9	41.65	500.0	clear
2	1030	11.31	5311	6.52	5.30	-10.9	7.78	41.62	500.0	clear
3	1035	11.27	5170	6.52	5.98	4.1	4.51	41.60	500.0	clear
4	1040	10.95	5084	6.50	5.86	13.6	2.58	41.58	500.0	clear
5	1045	11.04	5054	6.49	5.73	19.6	2.63	41.60	500.0	clear
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2500.0 mL



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 80
Sampling Personal: Jeremy Hoque

Weather Conditions: Temp: 60 °F Wind: N@S-10 Precip: Sunny / Partly Cloudy / ~~Cloudy~~

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	14.40	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	14.65	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	8 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		PSI:	15
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 Jun 17	Time Purging Began:	0857	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	—	am/pm
Sample Date:	22 Jun 17	Time of Sampling:	0917	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
SEQ #	Time									
1	0902	10.10	5791	7.07	4.96	186.8	0.41	14.58	500.0	clear
2	0907	9.75	5761	7.06	4.57	190.4	0.35	14.63	500.0	clear
3	0912	10.55	5769	7.05	4.50	190.6	0.36	14.65	500.0	Clear
4	0917	10.40	5756	7.05	4.56	191.1	0.38	14.62	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 2000.0 mL

Comments:



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett
 Event: 2017
 Sample ID: 103
 Sampling Personal: Jerry [Signature]

Weather Conditions: Temp: 60 °F Wind: N05-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	30.88	ft
Total Well Depth:	— ft	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	32.87	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		PSI:	25
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 June 17	Time Purging Began:	0601	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm	
Sample Date:	22 June 17	Time of Sampling:	0621	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			
	250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
SEQ #	Time									
1	0606	9.31	5025	6.68	8.64	253.6	0.99	31.75	500.0	Clear
2	0611	9.26	5019	6.64	4.72	253.0	0.92	32.25	500.0	Clear
3	0616	9.13	5017	6.60	4.47	252.5	0.60	32.31	500.0	Clear
4	0621	9.06	5015	6.59	4.43	249.9	0.58	32.36	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000.0 mL

Comments:



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 104
Sampling Personal: Jerry Meyer

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

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	13.92	ft
Total Well Depth:	—	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	14.21	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		PSI:	10
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 Jun 17	Time Purging Began:	1455	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	— am/pm	
Sample Date:	22 Jun 17	Time of Sampling:	1515	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
SEQ #	Time									
1	1500	12.17	13978	6.92	4.53	157.3	5.40	14.28	500.0	Clear
2	1505	12.39	14000	6.90	3.22	150.9	2.17	14.18	500.0	Clear
3	1510	11.81	14045	6.88	3.62	146.0	1.31	14.35	500.0	Clear
4	1515	11.82	14032	6.88	3.66	143.7	1.01	14.30	500.0	Clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 2000.0 mL



Field Datasheet

Groundwater Assessment

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

Company: MDU Heskett
Event: 2017
Sample ID: 105
Sampling Personal: Jerry Pley

Weather Conditions: Temp: 60 °F Wind: NWS-10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	12.94	ft
Total Well Depth:	— ft	
Well Volume:	— liters	
Depth to Top of Pump:	— ft	
Water Level After Sample:	13.18	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		PSI:	10
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 June 17	Time Purging Began:	0722	am/pm
Well Purged Dry?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry:	— am/pm	
Sample Date:	22 June 17	Time of Sampling:	0802	am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric 250 mL Sulfuric			

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid	
SEQ #	Time									
1	0727	9.12	5850	6.76	3.14	206.7	6.02	13.20	500.0	Clear
2	0732	8.96	5578	6.73	3.33	205.9	3.18	13.21	500.0	Clear
3	0737	8.95	5668	6.72	3.63	203.3	2.69	13.22	500.0	Clear
4	0742	8.94	6113	6.70	3.55	201.4	1.73	13.25	500.0	Clear
5	0747	9.25	6290	6.68	3.55	199.2	1.74	13.21	500.0	Clear
6	0752	9.08	6534	6.67	3.78	197.3	1.49	13.24	500.0	Clear
7	0757	9.09	6682	6.66	3.64	195.5	1.84	13.24	500.0	Clear
8	0802	9.16	6790	6.65	3.77	193.6	2.37	13.26	500.0	Clear
9										
10										

Stabilized: Yes No
Comments:

Total Volume Removed: 4000.0 mL

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Jerry May

Instrument
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration						
Date:	21 June 17		Time: 0659			
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	17.79	6.97	7.00	6.95-7.05	-21.1	0 +/- 50
Buffer 10	17.60	10.01	10.00	9.95-10.05	-198.0	-180 +/- 50
Conductivity					Check	
Buffer 10000	18.08	10098	10001	±10%	Buffer 5000	5002
ORP						
231 mV @ 25C	18.41	235.3	235.7	±10 mV		
DO					Barometric Pressure (mm Hg)	
	17.27	78.8 <i>replaced membrane</i>	93.4	mg/L	755	

Post Site Check		
Date:	21 June 17	
Time:	1700	
pH	Temp °C	Reading
Buffer 7	18.01	7.01
Conductivity		
Buffer 5000	18.13	4989

Pre Site Calibration						
Date:	22 June 17		Time: 0600			
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	18.45	7.02	7.00	6.95-7.05	-22.2	0 +/- 50
Buffer 10	19.04	9.98	10.00	9.95-10.05	-198.5	-180 +/- 50
Conductivity					Check	
Buffer 10000	17.45	10049	10000	±10%	Buffer 5000	5004
ORP						
231 mV @ 25C	17.88	235.8	235.7	±10 mV		
DO					Barometric Pressure (mm Hg)	
	16.49	101.4%	99.2%	mg/L	754	

Post Site Check		
Date:	22 June 17	
Time:	1710	
pH	Temp °C	Reading
Buffer 7	18.55	7.02
Conductivity		
Buffer 5000	18.13	4985

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

Chain of Custody Record

Project Name: MDU Heskett	Event: June 2017	Work Order Number: 82-1685
Report To: MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 phone: 701-222-7829 email:	Carbon Copy: Attn: Address:	Name of Sampler(s): <i>Jerry Kelly</i>

Sample Information					Bottle Type				Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	1 liter Nitric				Temp (°C)	Spec. Cond.	pH	Analysis Required
<i>WAS07</i>	<i>2-90</i>	<i>22 June 17</i>	<i>1350</i>	<i>GW</i>	<i>4</i>				<i>10.50</i>	<i>7500</i>	<i>6.87</i>	Rad 226 & Rad 228
<i>WAS08</i>	<i>3-90</i>	<i>22 June 17</i>	<i>1200</i>	<i>GW</i>	<i>4</i>				<i>9.88</i>	<i>5033</i>	<i>6.75</i>	
<i>WAS09</i>	<i>MW33</i>	<i>22 June 17</i>	<i>1045</i>	<i>GW</i>	<i>4</i>				<i>11.04</i>	<i>5054</i>	<i>6.49</i>	
<i>WAS10</i>	<i>MW80 R*</i>	<i>22 June 17</i>	<i>0917</i>	<i>GW</i>	<i>4</i>				<i>10.40</i>	<i>5756</i>	<i>7.05</i>	
<i>WAS11</i>	<i>MW103</i>	<i>22 June 17</i>	<i>0621</i>	<i>GW</i>	<i>4</i>				<i>9.06</i>	<i>5015</i>	<i>6.59</i>	
<i>WAS12</i>	<i>MW104</i>	<i>22 June 17</i>	<i>1515</i>	<i>GW</i>	<i>4</i>				<i>11.82</i>	<i>14032</i>	<i>6.88</i>	
<i>WAS13</i>	<i>MW105</i>	<i>22 June 17</i>	<i>0802</i>	<i>GW</i>	<i>4</i>				<i>9.16</i>	<i>6790</i>	<i>6.65</i>	
<i>WAS14</i>	<i>Dup 2</i>	<i>22 June 17</i>	<i>-</i>	<i>GW</i>	<i>4</i>				<i>-</i>	<i>-</i>	<i>-</i>	
<i>WAS15</i>	<i>FB2</i>	<i>22 June 17</i>	<i>-</i>	<i>W</i>	<i>4</i>				<i>-</i>	<i>-</i>	<i>-</i>	

Comments: * 22 June 17 d * per T. Olson w/ Barr
cc 9 Aug 17

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
<i>[Signature]</i>	<i>23 June 17</i>	<i>log in</i>	<i>Rd 1.7</i>
	<i>0823</i>	<i>Walk In #2</i>	<i>TM562 / TM588</i>
1			
2			

Received by:	
Name:	Date/Time
<i>Angel Simonson</i>	<i>23 June 17 823</i>



CASE NARRATIVE

MVTl Lab Reference No/SDG: 201682-1918
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June Event 2016
MVTl Laboratory Identifications: 16-W2419 through 16-W2424
Page 1 of 2

MDU Sample Identification	MVTl Laboratory #
Dup1	16-W2419
Field Blank (FB)	16-W2420
MW13	16-W2421
MW44R	16-W2422
MW103	16-W2423
MW102	16-W2424

I. RECEIPT

- All samples were received at the laboratory on 30 Jun 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.
 - Temperature of samples upon receipt was 7.0°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.
 - 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.



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-1918
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR June Event 2016
MVTL Laboratory Identifications: 16-W2419 through 16-W2424
Page 2 of 2

MDU Sample Identification	MVTL Laboratory #
Dup1	16-W2419
Field Blank (FB)	16-W2420
MW13	16-W2421
MW44R	16-W2422
MW103	16-W2423
MW102	16-W2424

- o For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
- o Dissolved selenium results are higher than total selenium results (>20%RPD) for samples 16-W2419 and 16-W2423. Both samples were reanalyzed to recheck the results prior to reporting.
- o One selenium (total) matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the matrix spike duplicate and the matrix spike recoveries was within limits. No further action was taken.
- o The recoveries for one selenium (total) matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. High recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 21 JUL 16
Claudette Carroll - MVTL Bismarck Laboratory Manager



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Page: 1 of 2

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

Report Date: 21 Jul 16
Lab Number: 16-W2419
Work Order #:82-1918
Account #: 002800
Date Sampled: 29 Jun 16
Date Received: 30 Jun 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR June Event 2016
Sample Description: Dup 1

Temp at Receipt: 7.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion						
pH	* 6.7	units	N/A	EPA 200.2	30 Jun 16	KMD
Total Suspended Solids	< 1	mg/l	1	SM4500 H+ B	30 Jun 16 18:00	KMD
Total Alkalinity	449	mg/l CaCO3	20	I3765-85	1 Jul 16 11:19	ML
Fluoride	0.29	mg/l	0.10	SM2320-B	30 Jun 16 18:00	KMD
Sulfate	2690	mg/l	5.00	SM4500-F-C	30 Jun 16 18:00	KMD
Chloride	106	mg/l	1.0	ASTM D516-07	14 Jul 16 11:17	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	SM4500-Cl-E	7 Jul 16 13:37	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 16 11:33	EV
Total Dissolved Solids	4510	mg/l	5	EPA 245.1	7 Jul 16 12:32	EV
Calcium - Total	540	mg/l	1.0	I1750-85	1 Jul 16 17:11	ML
Magnesium - Total	490	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Sodium - Total	262	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Potassium - Total	20.8	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Lithium - Total	0.57	mg/l	0.10	6010	7 Jul 16 14:08	KMD
Boron - Total	0.17	mg/l	0.10	6010	5 Jul 16 18:03	KMD
Calcium - Dissolved	535	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Magnesium - Dissolved	488	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Sodium - Dissolved	276	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Potassium - Dissolved	20.6	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Lithium - Dissolved	0.54	mg/l	0.10	6010	7 Jul 16 16:08	KMD
Boron - Dissolved	0.17	mg/l	0.10	6010	5 Jul 16 20:03	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	6 Jul 16 13:30	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Barium - Total	0.0097	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Selenium - Total	0.0645	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Jul 16 19:08	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Barium - Dissolved	0.0108	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	7 Jul 16 9:39	CC
Cadmium - Dissolved	< 0.001	mg/l	0.0005	6020	6 Jul 16 19:08	CC

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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

Report Date: 21 Jul 16
Lab Number: 16-W2419
Work Order #: 82-1918
Account #: 002800
Date Sampled: 29 Jun 16
Date Received: 30 Jun 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR June Event 2016
Sample Description: Dup 1

Temp at Receipt: 7.0C ROI

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

* Holding time exceeded

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

Approved by:

Claudette K. Carroll (handwritten signature) 21 JUL 16 (handwritten initials)

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 21 Jul 16
Lab Number: 16-W2420
Work Order #: 82-1918
Account #: 002800
Date Sampled: 29 Jun 16
Date Received: 30 Jun 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR June Event 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 7.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion						
pH	* 6.1	units	N/A	EPA 200.2 SM4500 H+ B	30 Jun 16 30 Jun 16 18:00	KMD KMD
Total Suspended Solids	< 1	mg/l	1	I3765-85	1 Jul 16 11:19	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	30 Jun 16 18:00	KMD
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	30 Jun 16 18:00	KMD
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Jul 16 11:17	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	7 Jul 16 13:37	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 16 11:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 16 12:32	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	1 Jul 16 17:11	ML
Calcium - Total	< 1	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Sodium - Total	< 1	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Potassium - Total	< 1	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	7 Jul 16 14:08	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jul 16 18:03	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	7 Jul 16 16:08	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	5 Jul 16 20:03	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	6 Jul 16 13:30	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Barium - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Jul 16 19:08	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	7 Jul 16 9:39	CC
Cadmium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	6 Jul 16 19:08	CC

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Page: 2 of 2

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

Report Date: 21 Jul 16
Lab Number: 16-W2420
Work Order #: 82-1918
Account #: 002800
Date Sampled: 29 Jun 16
Date Received: 30 Jun 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR June Event 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 7.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Jul 16 19:08	CC
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	7 Jul 16 9:39	CC
Selenium - Dissolved	< 0.01 ^	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	6 Jul 16 19:08	CC

* Holding time exceeded

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

Approved by:

Claudette K. Carroll

*CC
21 JUL 16*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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