2019 Annual Groundwater Monitoring and Corrective Action Report

Blue Pit

Coyote Station
Beulah, North Dakota

Prepared for
Otter Tail Power Company

January 2020

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234 West Century Avenue
Bismarck, ND 58503
701.255.5460
www.barr.com

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January 2020

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Acronyms

Acronym	Description
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
OTP	Otter Tail Power Company
SSI	Statistically Significant Increase

1.0 Introduction

Otter Tail Power Company (OTP) operates the Coyote Station (Coyote), located near Beulah, North Dakota. Coyote is a coal-fired electrical generating plant, operation of which results in coal combustion residuals (CCR) as a by-product. The Blue Pit is an existing CCR landfill at Coyote that is required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261, Disposal of Coal Combustion Residuals from Electric Utilities). The Blue Pit is shown on Figure 1.

This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Blue Pit at Coyote. The Blue Pit is currently in detection monitoring as described by §257.94 of the CCR Rule.

1.1 Purpose

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

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

1.2 Status of the Groundwater Monitoring and Corrective Action Program

Baseline monitoring was completed in 2017, as documented in the 2017 Annual Groundwater Monitoring and Corrective Action Report, Blue Pit Area (Barr, 2018). The detection monitoring program, which is the evaluation of groundwater monitoring data for statistically significant increases (SSIs) over background levels for the constituents listed in Appendix III to the CCR Rule, began on October 17, 2017 and continued through 2019.

1.3 CCR Rule Requirements

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

Table 1 CCR Rule Requirements

CCR Rule Reference	Content Required in Report	Location
§257.90(e)(1)	Map showing the CCR unit and all monitoring wells that are part of the groundwater monitoring system	Section 2.1.1 Documentation; see Figure 1
§257.90(e)(2)	Discuss any new or decommissioned monitoring wells	Section 2.1.2 Changes to Monitoring System
§257.90(e)(3)	Provide the number and date groundwater samples were collected, and the monitoring (i.e., detection or assessment)	Section 2.2 Monitoring and Analytical Results
§257.90(e)(4)	Discuss any transition between monitoring programs	Section 2.4 Key Activities for Upcoming Year
§257.90(e)(5)	Other information specified in §257.90 through §257.98	Other information not required in this report

2.0 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the Blue Pit for 2019. The groundwater monitoring system is described in Section 2.1, the monitoring and analytical results are described in Section 2.2, key actions completed and problems encountered are described in Section 2.3, and key activities planned for 2020 are described in Section 2.4.

2.1 Groundwater Monitoring System

2.1.1 Documentation

Figure 1 shows an aerial image of the Blue Pit and all upgradient (background) and downgradient monitoring wells, including the well identification numbers, that are part of the groundwater monitoring system, as required by §257.90(e)(1). Further details on the monitoring system and the Blue Pit monitoring wells are included in the Groundwater Monitoring System Report, Coyote Station Blue Pit Area (Barr, 2016).

2.1.2 Changes to Monitoring System

The groundwater monitoring system was unchanged in 2019.

2.2 Monitoring and Analytical Results

Groundwater samples were collected during two semiannual sampling events. A total of 12 groundwater samples (six monitoring wells and two sampling events) were collected and analyzed for the constituents listed in Appendix III (Part 257) in 2019 under the detection monitoring program, consistent with the requirements of § 257.94(c). Dates of sampling are reported on the field data sheets and analytical laboratory reports are presented in Appendix A.

2.3 Key Actions Completed/Problems Encountered

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

- Completed semiannual detection monitoring sampling for each background and downgradient well.
- Evaluated monitoring results pursuant to § 257.93(h).
- Identified elevated concentrations of calcium in monitoring well BLUE 14 during the fall 2019 sampling event. Evaluation of these results will continue in 2020.
- Determined that a statistically significant increase over background levels did not occur for the constituents listed in Appendix III at any downgradient monitoring well other than calcium at BLUE 14 during the semiannual detection monitoring sampling events. Monitoring well BLUE 14 was resampled in December 2019.

Problems were not encountered during the reporting period.

2.4 Key Activities for Upcoming Year

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

- Statistically evaluate the resampling analytical results from monitoring well BLUE 14 for an SSI for calcium.
- Evaluate analytical results from both 2020 semiannual detection monitoring events for statistically significant increases (SSIs) according to the CCR Groundwater Sampling and Analysis Plan (McCain, 2017).
- Continue the detection monitoring program in accordance with the CCR Rule.

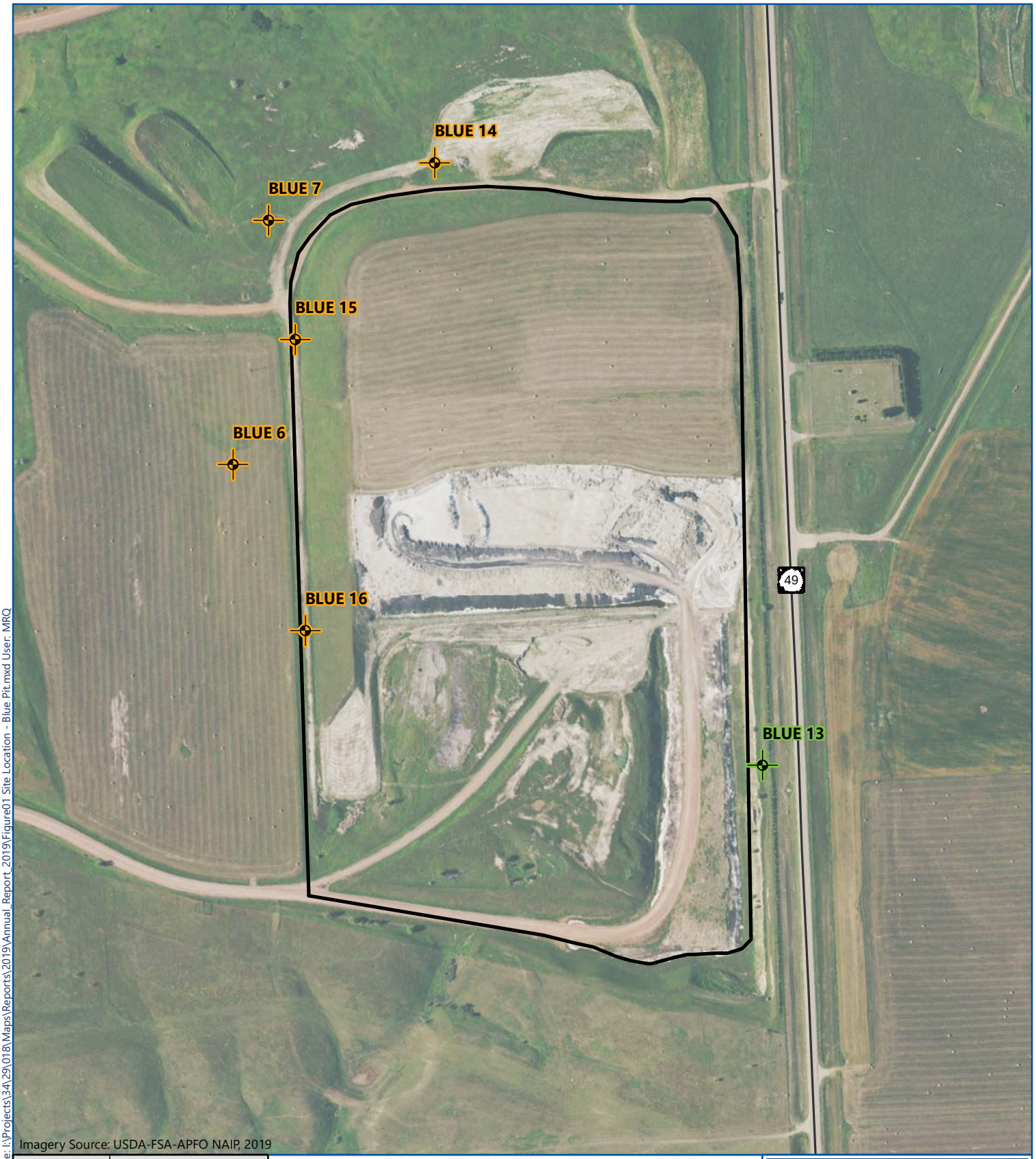
3.0 References

Barr, 2018. 2017 Annual Groundwater Monitoring and Corrective Action Report, Coyote Station Blue Pit Area. Prepared for Otter Tail Power Company. January 2018.

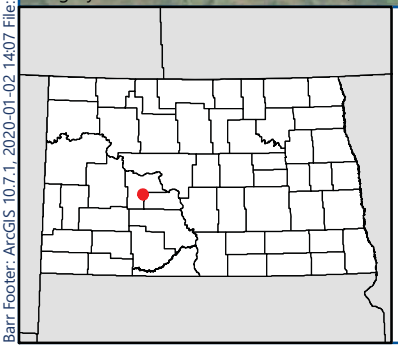
Barr, 2016. Groundwater Monitoring System Report, Coyote Station Blue Pit Area. Prepared for Otter Tail Power Company. November 2016.

Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan (Including Statistical Method Selection and Certification), Coyote Station Blue Pit. Prepared for Otter Tail Power Company. October 2017.

Figures



Imagery Source: USDA-FSA-APFO NAIP, 2019



Upgradient Monitoring Well

Downgradient Monitoring Well

Blue Pit

N

0 250 500

Feet

BLUE PIT LOCATION
Coyote Station
Otter Tail Power Company
Beulah, North Dakota

FIGURE 1

Barr Footer: ArcGIS 10.7.1, 2020-01-02 14:07 File: I:\Projects\34\29\018\Maps\Reports\2019\Annual_Report_2019\Figure01 Site Location - Blue Pit.mxd User: MRQ

Appendices

Appendix A

Laboratory Reports and Field Sheets

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1677
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: FB Blue

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Lab, pH	* 6.3	s.u.	0.1	SM4500 H+ B	7 Jun 19 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	7 Jun 19 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	6 Jun 19 10:50	EV
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	11 Jun 19 8:31	EMS
Total Dissolved Solids	< 10	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	< 1	mg/l	1.0	6010D	17 Jun 19 15:30	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

CC

Approved by: Claudette K. Carroll 1 JUL 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1678
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 10:35
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 6

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.62	s.u.	0.1	SM 4500 H+ B	5 Jun 19 10:35	DJN
Lab, pH	* 7.0	s.u.	0.1	SM4500 H+ B	7 Jun 19 17:00	SVS
Field Appearance	Cloudy		NA	SM 2110	5 Jun 19 10:35	DJN
Field Temperature	14.0	Degrees C	0.1	SM 2550B	5 Jun 19 10:35	DJN
Field Conductivity	2390	umhos/cm	1	EPA 120.1	5 Jun 19 10:35	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	7 Jun 19 17:00	SVS
Sulfate	739	mg/l	5.00	ASTM D516-07	6 Jun 19 10:50	EV
Chloride	5.9	mg/l	1.0	SM4500-Cl-E	11 Jun 19 8:31	EMS
Total Dissolved Solids	1710	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	155	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	0.41	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CL 1 JUL 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1679
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 12:11
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 7

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.44	s.u.	0.1	SM 4500 H+ B	5 Jun 19 12:11	DJN
Lab, pH	* 6.9	s.u.	0.1	SM4500 H+ B	7 Jun 19 17:00	SVS
Field Appearance	Clear		NA	SM 2110	5 Jun 19 12:11	DJN
Field Temperature	11.3	Degrees C	0.1	SM 2550B	5 Jun 19 12:11	DJN
Field Conductivity	2464	umhos/cm	1	EPA 120.1	5 Jun 19 12:11	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	7 Jun 19 17:00	SVS
Sulfate	817	mg/l	5.00	ASTM D516-07	10 Jun 19 8:48	EV
Chloride	6.0	mg/l	1.0	SM4500-Cl-E	11 Jun 19 9:05	EMS
Total Dissolved Solids	1820	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	167	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	0.43	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll RC 1 Jul 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1680
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 9:45
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 13

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.77	s.u.	0.1	SM 4500 H+ B	5 Jun 19 9:45	DJN
Lab, pH	* 7.4	s.u.	0.1	SM4500 H+ B	7 Jun 19 17:00	SVS
Field Appearance	Cloudy		NA	SM 2110	5 Jun 19 9:45	DJN
Field Temperature	11.4	Degrees C	0.1	SM 2550B	5 Jun 19 9:45	DJN
Field Conductivity	5737	umhos/cm	1	EPA 120.1	5 Jun 19 9:45	DJN
Fluoride	0.29	mg/l	0.10	SM4500-F-C	7 Jun 19 17:00	SVS
Sulfate	2300	mg/l	5.00	ASTM D516-07	10 Jun 19 8:48	EV
Chloride	25.3	mg/l	1.0	SM4500-Cl-E	11 Jun 19 9:05	EMS
Total Dissolved Solids	4600	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	94.5	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	< 0.5 @	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll 19 Jun 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1681
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 14:04
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 14

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.58	s.u.	0.1	SM 4500 H+ B	5 Jun 19 14:04	DJN
Lab, pH	* 6.9	s.u.	0.1	SM4500 H+ B	7 Jun 19 17:00	SVS
Field Appearance	Clear		NA	SM 2110	5 Jun 19 14:04	DJN
Field Temperature	14.0	Degrees C	0.1	SM 2550B	5 Jun 19 14:04	DJN
Field Conductivity	4832	umhos/cm	1	EPA 120.1	5 Jun 19 14:04	DJN
Fluoride	0.14	mg/l	0.10	SM4500-F-C	7 Jun 19 17:00	SVS
Sulfate	1890	mg/l	5.00	ASTM D516-07	10 Jun 19 8:48	EV
Chloride	13.9	mg/l	1.0	SM4500-Cl-E	11 Jun 19 9:05	EMS
Total Dissolved Solids	3800	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	250	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	0.60	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 1 Jun 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1682
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 16:57
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 15

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.49	s.u.	0.1	SM 4500 H+ B	5 Jun 19 16:57	DJN
Lab, pH	* 6.9	s.u.	0.1	SM4500 H+ B	7 Jun 19 18:00	SVS
Field Appearance	Clear		NA	SM 2110	5 Jun 19 16:57	DJN
Field Temperature	14.7	Degrees C	0.1	SM 2550B	5 Jun 19 16:57	DJN
Field Conductivity	3573	umhos/cm	1	EPA 120.1	5 Jun 19 16:57	DJN
Fluoride	0.19	mg/l	0.10	SM4500-F-C	7 Jun 19 18:00	SVS
Sulfate	1170	mg/l	5.00	ASTM D516-07	10 Jun 19 8:48	EV
Chloride	8.7	mg/l	1.0	SM4500-Cl-E	11 Jun 19 9:05	EMS
Total Dissolved Solids	2580	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	133	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	0.55	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll TC 1JUL 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Jun 19
Lab Number: 19-W1683
Work Order #:82-1321
Account #: 006106
Date Sampled: 5 Jun 19 15:39
Date Received: 6 Jun 19 8:00
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 5.0C ROI

Project Name: OTP Coyote - Blue Pit CCR

Sample Description: Blue 16

Event and Year: 2nd Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Jun 19	SVS
Field pH	6.57	s.u.	0.1	SM 4500 H+ B	5 Jun 19 15:39	DJN
Lab, pH	* 7.0	s.u.	0.1	SM4500 H+ B	7 Jun 19 18:00	SVS
Field Appearance	Clear		NA	SM 2110	5 Jun 19 15:39	DJN
Field Temperature	16.2	Degrees C	0.1	SM 2550B	5 Jun 19 15:39	DJN
Field Conductivity	2367	umhos/cm	1	EPA 120.1	5 Jun 19 15:39	DJN
Fluoride	0.22	mg/l	0.10	SM4500-F-C	7 Jun 19 18:00	SVS
Sulfate	701	mg/l	5.00	ASTM D516-07	10 Jun 19 8:48	EV
Chloride	5.6	mg/l	1.0	SM4500-Cl-E	11 Jun 19 9:05	EMS
Total Dissolved Solids	1680	mg/l	10	I1750-85	7 Jun 19 10:03	SVS
Calcium - Total	120	mg/l	1.0	6010D	17 Jun 19 16:30	SZ
Boron - Total	0.43	mg/l	0.10	6010D	19 Jun 19 11:41	SZ

* Holding time exceeded

CC

Approved by: Claudette K. Carroll 1 JUL 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER
ACIL

Quality Control Report

Lab IDs: 19-W1677 to 19-W1683 **Project:** OTP Coyote - Blue Pit CCR **Work Order:** 201982-1321

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Total mg/l	0.40	105	80-120	0.400	19-W1679	0.43	0.86	108	75-125	0.86	0.84	102	2.4	20	-	-	< 0.1
	0.40	105	80-120	0.400	19-W1683	0.43	0.84	102	75-125	0.84	0.85	105	1.2	20	-	-	< 0.1
	0.40	105	80-120	2.00	19-W1708	0.34	2.78	122	75-125	2.78	2.60	113	6.7	20	-	-	< 0.1
															-	-	< 0.1
Calcium - Total mg/l	20.0	98	80-120	500	19W1661q	595	1170	115	75-125	1170	1180	117	0.9	20	-	-	< 1
	20.0	99	80-120	100	19W1679q	167	262	95	75-125	262	269	102	2.6	20	-	-	< 1
				100	19W1686q	164	259	95	75-125	259	263	99	1.5	20	-	-	< 1
															-	-	< 1
Chloride mg/l	30.0	95	80-120	30.0	19-D1759	47.8	75.2	91	80-120	75.2	76.3	95	1.5	20	-	-	< 1
	30.0	94	80-120	30.0	19-W1679	6.0	32.9	90	80-120	32.9	34.8	96	5.6	20	-	-	< 1
	30.0	92	80-120	30.0	19-W1686	6.1	33.3	91	80-120	33.3	33.6	92	0.9	20	-	-	< 1
	30.0	91	80-120												-	-	< 1
Fluoride mg/l	0.50	104	90-110	0.500	19-W1679	0.20	0.72	104	80-120	0.72	0.72	104	0.0	20	-	-	< 0.1
	0.50	106	90-110	0.500	19-W1686	0.20	0.72	104	80-120	0.72	0.73	106	1.4	20	-	-	< 0.1
				0.500	19-W1693	0.11	0.61	100	80-120	0.61	0.61	100	0.0	20	-	-	< 0.1
															-	-	< 0.1
pH units	-	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	6.9	7.0	-	1.4	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.0	7.1	-	1.4	20	-	-	-
	-	-	-	-	-	-	-	-	-	8.0	8.1	-	1.2	20	-	-	-
Sulfate mg/l	100	100	80-120	100	19-W1677	< 5	103	103	80-120	103	102	102	1.0	20	-	-	< 5
	100	103	80-120	500	19-W1679	817	1290	95	80-120	1290	1290	95	0.0	20	-	-	< 5
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	5150	5170	-	0.4	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	1820	1840	-	1.1	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	1810	1820	-	0.6	20	-	-	< 10

Samples were received in good condition on 6 Jun 2019 at 0800.
Temperature upon receipt at the Bismarck laboratory was 5.0°C. Samples were received on ice and evidence of cooling had begun.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
All holding times were met.
Approved methodology was followed for all sample analyses.
All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/duplicates unless noted here.
For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.

Approved by: C. Carlo
1 JUL 19

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 2nd Qtr 2019
Sample ID: Blue 6
Sampling Personal: Darren Mizsavas

Weather Conditions: Temp: 65 °F Wind: South 10 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:	61.13	ft
Total Well Depth:	79.10	ft
Well Volume:	11.1	liters
Depth to Top of Pump:	75.69	ft
Water Level After Sample:	67.13	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

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

Purge Date:	4 June 19	Time Purging Began:	1540 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	1635 am/pm
Sample Date:	5 June 19	Time of Sampling:	1035 am/pm

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1545	12.08	2639	6.76	0.80	26.1	71000	62.53	200	1000	cloudy
2	1555	10.91	2592	6.52	0.56	18.5	60.1	67.36	200	2000	clear
3	1605	10.63	2568	6.61	2.13	12.5	33.4	71.51	200	2000	clear
4	1620	10.68	2555	6.62	2.43	9.1	20.5	74.63	200	3000	clear
5	1635	10.84	2312	6.56	0.80	-9.2	~~20.5~~ 29.2	75.69 Below	200	3000	Partly cloudy
6								Pump			
7											
8									reducing		
9	1030	Purged	line	for 5	min			—	100	500	
10	1035	14.02	2390	6.62	2.63	-206.1	65.4	—	—	—	cloudy

Stabilized: Yes (No)

Total Volume Removed: 11,500 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: OTP Coyote

Event: 2nd Qtr 2019

Sample ID: Blue 7

Sampling Personal: Darren Wieswacy

Weather Conditions: Temp: 75 °F Wind: South 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:	78.60	ft
Total Well Depth:	97.65	ft
Well Volume:	19.1	liters
Depth to Top of Pump:	~~[illegible]~~	ft
Water Level After Sample:	78.67	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	Tubing
Duplicate Sample?:	(Yes)	~~No~~	
Duplicate Sample ID:	MS/MSD		

Control Settings		
Purge:	5	sec.
Recover:	25	sec.
PSI:		

Purge Date:	5 June 19	Time Purging Began:	1121 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	~~am/pm~~
Sample Date:	5 June 19	Time of Sampling:	1211 am/(pm)

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	Pumping Rate	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	mL/min		clear, partly cloudy, cloudy
1	1126	11.80	2472	6.57	5.55	-253.9	48.0	78.66	180	900	Clear
2	1146	11.02	2466	6.49	4.02	-225.4	38.3	78.67	180	3600	Clear
3	1151	11.25	2467	6.44	3.58	-224.7	18.0	78.67	180	900	Clear
4	1156	11.37	2462	6.44	3.44	-224.6	14.5	78.67	180	900	clear
5	1201	11.35	2458	6.44	3.40	-222.3	11.1	78.67	180	900	clear
6	1206	11.31	2466	6.43	3.38	-223.0	12.0	78.67	180	900	clear
7	1211	11.29	2464	6.44	3.21	-223.2	11.2	78.65	180	900	clear
8								~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 9,000 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: OTP Coyote

Event: 2nd Qtr 2019

Sample ID: Blue 13

Sampling Personal: Darren Nissman

Weather Conditions: Temp: 65 °F Wind: W 5 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:	105.49	ft
Total Well Depth:	116.65	ft
Well Volume:	6.9	liters
Depth to Top of Pump:	110.75	ft
Water Level After Sample:	110.75 TOP	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	~~Yes~~	No Tubing	
Duplicate Sample?:	Yes	~~No~~	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	100	
with bottle		

Purge Date:	4 June 19	Time Purging Began:	1450 am/pm
Well Purged Dry?	~~Yes~~ No	Time Purged Dry:	1525 am/pm
Sample Date:	5 June 19	Time of Sampling:	am/pm

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	Pumping Rate	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	mL/min		clear, partly cloudy, cloudy
1	1455	12.00	5680	6.77	1.06	53.2	52.3	107.93	200	1000	clear
2	1515	15.37	5712	6.87	4.45	51.6	70.1	109.51	200	~~1000~~ 2000	clear
3	1525	13.71	5766	6.80	1.19	43.8	3.42	110.75	200 300	2000	cloudy
4								Below pump			
5											
6											
7											
8											
9	0940	Purged	Dry	for	5 min.			—	Pump		
10	0945	11.35	5737	6.77	2.83	-208.1	3.76	—	100	500	clear cloudy

Stabilized: Yes No

Total Volume Removed: 6500 mL

Comments:

Had trouble with the pump around 1510 pulled and reset

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 2nd Qtr 2019
Sample ID: Blue 14
Sampling Personal: Darren Nistaas

Weather Conditions: Temp: 81 °F Wind: South West 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:	77.52 ft
Total Well Depth:	86.98 ft
Well Volume:	5.9 liters
Depth to Top of Pump:	— ft
Water Level After Sample:	78.34 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No Tubing	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

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

Purge Date:	5 June 19	Time Purging Began:	1314 am/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	5 June 19	Time of Sampling:	am/pm

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1319	15.45	5308	6.79	0.53	312.4	22.1	78.09	100	500	Clear
2	1334	14.22	5702	6.72	0.15	-220.1	59.4	78.22	100	1500	clear
3	1349	14.30	4874	6.57	0.24	-221.1	26.8	78.32	100	1500	clear
4	1354	14.14	4844	6.65	0.81	-223.2	10.8	78.32	100	500	Clear
5	1359	14.02	4833	6.60	0.85	-222.6	10.1	78.32	100	500	clear
6	1404	13.99	4832	6.58	0.90	-221.0	9.81	78.32	100	500	clear
7											
8											
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 5000 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 2nd Qtr 2019
Sample ID: Blue 15
Sampling Personal: Darcin Nieswand

Weather Conditions: Temp: 85 °F Wind: SW 10 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:	75.18	ft
Total Well Depth:	807.80	ft
Well Volume:	7.8	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	75.35	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	5 sec.
Dedicated Equip?:	(Yes) No Tubing	Recover:	55 sec.
Duplicate Sample?:	Yes (No)	PSI:	
Duplicate Sample ID:			
Purge Date:	5 June 19	Time Purging Began:	1622 am/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	5 June 19	Time of Sampling:	1657 am/pm

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1627	15.79	3756	6.67	0.69	-268.1	26.3	75.28	100	500	clear
2	1637	14.46	3626	6.31	0.27	-296.7	6.89	75.34	100	1000	clr
3	1642	14.36	3602	6.47	0.20	-256.8	4.50	75.30	100	500	clr
4	1647	14.88	3579	6.45	0.15	-237.1	3.10	75.32	100	500	clr
5	1652	14.64	3583	6.48	0.20	-226.4	2.79	75.33	100	500	clr
6	1657	14.73	3573	6.49	0.25	-219.3	2.76	75.33	100	500	clr
7											
8											
9											
10											

Stabilized: (Yes) No
Total Volume Removed: 3500 mL
Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 2nd Qtr 2019
Sample ID: Blue 16
Sampling Personal: Darren Niesvaag

Weather Conditions: Temp: 82 °F Wind: South west 10 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:	73.65	ft
Total Well Depth:	97.58	ft
Well Volume:	14.8	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	73.68	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	~~Yes~~ No Tubing		
Duplicate Sample?:	Yes (No)		
Duplicate Sample ID:	—		

Purge Date:	5 June 19	Time Purging Began:	1449 am/~~pm~~
Well Purged Dry?	Yes ~~No~~	Time Purged Dry:	~~am/pm~~
Sample Date:	5 June 19	Time of Sampling:	1539 am/~~pm~~

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

Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric
	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	Pumping Rate	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	mL/min		clear, partly cloudy, cloudy
1	1454	17.74	2364	6.76	0.91	-301.8	228	73.66	100	500	Partly Cloudy
2	1514	16.59	2365	6.56	2.01	-267.6	87.4	73.66	100	2000	clear
3	1524	16.36	2364	6.56	0.70	-233.2	68.3	73.66	100	1000	clear
4	1529	16.06	2365	6.58	0.73	-230.8	65.3	73.68	100	500	clear
5	1534	16.09	2367	6.58	0.78	-223.3	65.1	73.67	100	500	clear
6	1539	16.23	2367	6.57	0.81	-224.7	60.0	73.66	100	500	clear
7											
8											
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 5000 mL

Comments:

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
OTP Coyote - Blue Pit CCR	2nd Qtr 2019	82-1321

Report To:	Otter Tail Power	Carbon Copy:	Name of Sampler(s):
Attn:	Josh Hollen	Attn:	Darren Niesvaag
Address:	PO Box 496 Fergus Falls, MN 56538-0496	Address:	
phone:			
email:	jhollen@otpco.com		

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Appearance (Clear, Partly Cloudy, Cloudy)	1 liter	500mL Nitric	500mL Nitric (filtered)	250mL Sulfuric				Temp (°C)	Spec. Cond.	pH	Analysis Required
W1677	FB Blue	5 June 19	NA	W	—	X	X						NA	NA	NA	OTP CCR Appendix 3
W1678	Blue 6	5 June 19	1035	GW	cloudy	X	X						14.01	2390	6.62	
W1679	Blue 7/MS7/MSD7	5 June 19	1211	GW	clear	3	3						11.29	2464	6.44	
W1680	Blue 13	5 June 19	0945	GW	cloudy	X	X						11.35	5737	6.77	
W1681	Blue 14	5 June 19	1404	GW	clear	X	X						13.99	4832	6.58	
W1682	Blue 15	5 June 19	1657	GW	clear	X	X						14.73	3573	6.49	
W1683	Blue 16	5 June 19	1539	GW	clear	X	X						16.23	2367	6.57	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1	5 June 19 2050	Log In ~~Walk In #2~~	~~TM562~~ TM588 ROI 5.0
2			

Received by:	
Name:	Date/Time
	6 Jun 2019 0800

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

MEMBER ACIL

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4535
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 0.6C

Project Name: OTP Coyote-Blue Pit CCR

Sample Description: FB Blue

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Lab, pH	* 6.6	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	< 5	mg/l	5.00	ASTM D516-07	13 Nov 19 8:40	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	8 Nov 19 11:34	EV
Total Dissolved Solids	10	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	< 1	mg/l	1.0	6010D	13 Nov 19 10:12	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	20 Nov 19 8:42	SZ

TDS result was reanalyzed in duplicate.

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26NOV19

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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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

MEMBER ACIL

CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4536
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19 10:40
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: Blue 6

Temp at Receipt: 0.6C

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	6.64	s.u.	0.1	SM 4500 H+ B	5 Nov 19 10:40	JSM
Lab, pH	* 7.3	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	5 Nov 19 10:40	JSM
Field Temperature	7.70	Degrees C	0.1	SM 2550B	5 Nov 19 10:40	JSM
Field Conductivity	2098	umhos/cm	1	EPA 120.1	5 Nov 19 10:40	JSM
Fluoride	0.20	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	664	mg/l	5.00	ASTM D516-07	13 Nov 19 8:40	EMS
Chloride	6.4	mg/l	1.0	SM4500-Cl-E	8 Nov 19 11:34	EV
Total Dissolved Solids	1570	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	166	mg/l	1.0	6010D	13 Nov 19 10:12	SZ
Boron - Total	0.40	mg/l	0.10	6010D	20 Nov 19 8:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26 Nov 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

Amended 11 Dec 19 (Calcium) - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4537
Work Order #:82-3201
Account #: 006106
Date Sampled: 4 Nov 19 14:37
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: Blue 7

Temp at Receipt: 0.6C ROI

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	6.57	s.u.	0.1	SM 4500 H+ B	4 Nov 19 14:37	JSM
Lab, pH	* 7.3	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	4 Nov 19 14:37	JSM
Field Temperature	8.37	Degrees C	0.1	SM 2550B	4 Nov 19 14:37	JSM
Field Conductivity	2356	umhos/cm	1	EPA 120.1	4 Nov 19 14:37	JSM
Fluoride	0.21	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	778	mg/l	5.00	ASTM D516-07	13 Nov 19 9:01	EMS
Chloride	7.1	mg/l	1.0	SM4500-Cl-E	8 Nov 19 11:34	EV
Total Dissolved Solids	1740	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	174	mg/l	1.0	6010D	13 Nov 19 10:12	SZ
Boron - Total	0.38	mg/l	0.10	6010D	20 Nov 19 8:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 11 DEC 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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The reporting limit was elevated for any analyte requiring a dilution as coded below:
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! = Due to sample quantity + = Due to internal standard response

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CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4538
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19 10:25
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 0.6C ROI

Project Name: OTP Coyote-Blue Pit CCR

Sample Description: Blue 13

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	7.11	s.u.	0.1	SM 4500 H+ B	5 Nov 19 10:25	JSM
Lab, pH	* 7.8	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	5 Nov 19 10:25	JSM
Field Temperature	7.05	Degrees C	0.1	SM 2550B	5 Nov 19 10:25	JSM
Field Conductivity	6866	umhos/cm	1	EPA 120.1	5 Nov 19 10:25	JSM
Fluoride	0.28	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	3070	mg/l	5.00	ASTM D516-07	13 Nov 19 9:01	EMS
Chloride	34.2	mg/l	1.0	SM4500-Cl-E	8 Nov 19 11:34	EV
Total Dissolved Solids	5610	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	142	mg/l	1.0	6010D	13 Nov 19 10:12	SZ
Boron - Total	0.50	mg/l	0.10	6010D	20 Nov 19 9:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26 Nov 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4539
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19 15:05
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 0.6C ROI

Project Name: OTP Coyote-Blue Pit CCR

Sample Description: Blue 14

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	6.66	s.u.	0.1	SM 4500 H+ B	5 Nov 19 15:05	JSM
Lab, pH	* 7.4	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	5 Nov 19 15:05	JSM
Field Temperature	6.92	Degrees C	0.1	SM 2550B	5 Nov 19 15:05	JSM
Field Conductivity	5178	umhos/cm	1	EPA 120.1	5 Nov 19 15:05	JSM
Fluoride	0.13	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	2300	mg/l	5.00	ASTM D516-07	13 Nov 19 9:01	EMS
Chloride	11.0	mg/l	1.0	SM4500-Cl-E	8 Nov 19 11:34	EV
Total Dissolved Solids	4510	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	350	mg/l	1.0	6010D	13 Nov 19 11:12	SZ
Boron - Total	0.62	mg/l	0.10	6010D	20 Nov 19 9:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26NOV19

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

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4540
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19 13:25
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: Blue 15

Temp at Receipt: 0.6C ROI

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	6.63	s.u.	0.1	SM 4500 H+ B	5 Nov 19 13:25	JSM
Lab, pH	* 7.4	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	5 Nov 19 13:25	JSM
Field Temperature	7.88	Degrees C	0.1	SM 2550B	5 Nov 19 13:25	JSM
Field Conductivity	3168	umhos/cm	1	EPA 120.1	5 Nov 19 13:25	JSM
Fluoride	0.21	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	959	mg/l	5.00	ASTM D516-07	13 Nov 19 9:01	EMS
Chloride	9.1	mg/l	1.0	SM4500-Cl-E	8 Nov 19 12:08	EV
Total Dissolved Solids	2460	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	136	mg/l	1.0	6010D	13 Nov 19 11:12	SZ
Boron - Total	0.44	mg/l	0.10	6010D	20 Nov 19 9:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26NOV19

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

Josh Hollen
Otter Tail Power Co.
PO Box 496
Fergus Falls MN 56538-0496

Report Date: 20 Nov 19
Lab Number: 19-W4541
Work Order #:82-3201
Account #: 006106
Date Sampled: 5 Nov 19 12:15
Date Received: 5 Nov 19 16:50
Sampled By: MVTL Field Services

PO #: 48895

Temp at Receipt: 0.6C ROI

Project Name: OTP Coyote-Blue Pit CCR

Sample Description: Blue 16

Event and Year: 4th Qtr 2019

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Nov 19	EMS
Field pH	6.63	s.u.	0.1	SM 4500 H+ B	5 Nov 19 12:15	JSM
Lab, pH	* 7.3	s.u.	0.1	SM4500 H+ B	6 Nov 19 17:00	CC
Field Appearance	Clear		NA	SM 2110	5 Nov 19 12:15	JSM
Field Temperature	8.60	Degrees C	0.1	SM 2550B	5 Nov 19 12:15	JSM
Field Conductivity	2054	umhos/cm	1	EPA 120.1	5 Nov 19 12:15	JSM
Fluoride	0.22	mg/l	0.10	SM4500-F-C	6 Nov 19 17:00	CC
Sulfate	580	mg/l	5.00	ASTM D516-07	13 Nov 19 9:01	EMS
Chloride	6.4	mg/l	1.0	SM4500-Cl-E	8 Nov 19 12:08	EV
Total Dissolved Solids	1500	mg/l	10	I1750-85	8 Nov 19 13:15	HT
Calcium - Total	115	mg/l	1.0	6010D	13 Nov 19 11:12	SZ
Boron - Total	0.40	mg/l	0.10	6010D	20 Nov 19 9:42	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll CC 26NOV19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATION: ND # ND-00016

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Quality Control Report – Amended 11 Dec 19

Lab IDs: 19-W4535 to 19-W4541 **Project:** OTP Coyote-Blue Pit CCR **Work Order:** 201982-3201

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Total mg/l	0.40 0.40	102 100	80-120 80-120	0.400 0.400 0.400	19-D3774 19-W4537 19-W4671	0.34 0.38 < 0.1	0.72 0.75 0.47	95 92 118	75-125 75-125 75-125	0.72 0.75 0.47	0.74 0.75 0.46	100 92 115	2.7 0.0 2.2	20 20 20	- - - -	- - - -	< 0.1 < 0.1 < 0.1 < 0.1
Calcium - Total mg/l	20.0 20.0	110 110	80-120 80-120	500 500	19W4537q 19W4547q	870 715	1300 1140	86 85	75-125 75-125	1300 1140	1290 1140	84 85	0.8 0.0	20 20	- - - -	- - - -	< 1 < 1 < 1 < 1
Chloride mg/l	30.0 30.0 30.0 30.0	98 99 97 96	80-120 80-120 80-120 80-120	30.0 30.0	19-W4537 19-W4574	7.1 63.3	36.2 94.8	97 105	80-120 80-120	36.2 94.8	36.3 94.9	97 105	0.3 0.1	20 20	- - - -	- - - -	< 1 < 1 < 1 < 1
Fluoride mg/l	0.50	92	90-110	0.500	19-W4537	0.21	0.73	104	80-120	0.73	0.73	104	0.0	20	- -	- -	< 0.1 < 0.1
pH units	- -	- -	- -	- -	- -	- -	- -	- -	- -	7.6 7.3	7.7 7.3	- -	1.3 0.0	20 20	- -	- -	-
Sulfate mg/l	100 100	94 116	80-120 80-120	100 500	19-W4535 19-W4537	< 5 778	99.9 1250	100 94	80-120 80-120	99.9 1250	107 1290	107 102	6.9 3.1	20 20	- -	- -	< 5 < 5
Total Dissolved Solids mg/l	- -	- -	- -	- -	- -	- -	- -	- -	- -	2460 4080	2450 4160	- -	0.4 1.9	20 20	- -	- -	< 10

Samples were received in good condition on 5 Nov 2019 at 1650.
Temperature upon receipt at the Bismarck laboratory was 0.6°C. Samples were received on ice and evidence of cooling had begun.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
With the exception of pH, all holding times were met.
Approved methodology was followed for all sample analyses.
All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/duplicates unless noted here.

- Field blank (19-W4535) had a result for TDS at the reporting limit. The sample was rechecked, in duplicate, and result was verified.

Reporting

- Per email dated 5 Dec 19 from Dana Pasi, Barr, the raw data for the calcium result on Blue 7 was reviewed. It was determined that a factor of 5 dilution error was mistakenly applied to the sample result. An amended report has been issued.

Approved by: C. Carlson
11 Dec 19

Claudette Carroll

From: Dana B. Pasi <DPasi@barr.com>
Sent: Thursday, December 5, 2019 3:41 PM
To: Julie Crispin; Claudette Carroll
Subject: FW: EDD'S FOR 201982-3201 OTP COYOTE -Blue Pit CCR November 2019
Attachments: 2019 OTP FALL FIELD.pdf; 201982-3201 OTP COYOTE BLUE CCR.pdf; EFWEDD_201982-3201.zip

Hello,

After review of this data report for OTP Coyote, we are hoping you can take a second look at a result. When we compare historical results we have a considerable increase for Calcium in Blue 7; it went from ~180 mg/l the last few years to 870 mg/l this time. The other parameters did not fluctuate that much. Thank you for looking in to this!

Dana B. Pasi

Environmental Scientist
Minneapolis, MN office: 952.832.2756
cell: 612.229.6109
DPasi@barr.com
www.barr.com

From: Julie Crispin <jcrispin@mvtl.com>
Sent: Wednesday, November 27, 2019 8:55 AM
To: Barr Data Management <BarrDM@barr.com>; 'Josh Hollen' <jhollen@otpco.com>; Justin Soberaski <JSoberaski@barr.com>; Margaret S. Treanor <MTreanor@barr.com>; 'pvukonich@otpco.com' <pvukonich@otpco.com>; Barr Data Management <BarrDM@barr.com>
Cc: Claudette Carroll <ccarroll@mvtl.com>; Jesse Hedlund <jhedlund@mvtl.com>; Mary Hames <mhames@mvtl.com>; Steve Bowen <sbowen@mvtl.com>
Subject: EDD'S FOR 201982-3201 OTP COYOTE -Blue Pit CCR November 2019

Good day, please see the attached EDD's for WO# 201982-3201. This is for CCR.

Thank you-

Julie Crispin

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: OTP Coyote

Event: 4th Qtr 2019

Sample ID: Blue 6

Sampling Personal: Jerry Meyer

Weather Conditions: Temp: 20 °F Wind: N @ 5-10 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:	58.46	ft
Total Well Depth:	79.10	ft
Well Volume:	12.7	liters
Depth to Top of Pump:	74.80	ft
Water Level After Sample:	61.86	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	(No)	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	80	

Purge Date:	4 Nov 19	Time Purging Began:	1154 (am/pm)
Well Purged Dry?	(Yes) No	Time Purged Dry:	1259 am/(pm)
Sample Date:	5 Nov 19	Time of Sampling:	1040 (am/pm)

Bottle List: 1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1159	8.93	2404	6.65	2.93	4.9	100.0	59.02	200.0	1000.0	Clear
2	1219	8.79	2376	6.64	3.20	19.6	124.0	67.32	200.0	4000.0	Partly Cloudy
3	1239	8.61	2346	6.67	3.48	37.3	40.0	72.50	200.0	4000.0	Clear
4	1259	8.41	2269	6.62	2.70	32.7	259.0	74.80	200.0	4000	~~Clear~~ Partly Cloudy
5											
6											
7											
8										recharge	
9	1035	Purged dry 11 Pur		5 min	to clear the line			59.02	200.0	1000.0	
10	1040	7.70	2098	6.64	8.02	45.9	23.7	60.92	—	—	Clear

Stabilized: Yes (No)

Total Volume Removed: 14,000.0 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 4th Qtr 2019
Sample ID: Blue 7
Sampling Personal: Jeremy Meyer

Weather Conditions: Temp: 30 °F Wind: N@5-10 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:	76.34	ft
Total Well Depth:	97.63	ft
Well Volume:	—	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	76.45	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	(No)	
Duplicate Sample?:	(Yes)	No	
Duplicate Sample ID:	MS/MSD		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	90	

Purge Date:	4 Nov 19	Time Purging Began:	1312 am/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	4 Nov 19	Time of Sampling:	1437 am/pm

Bottle List: 1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1317	6.34	2355	6.76	1.01	26.3	60.8	76.47	150.0	750.0	Clear
2	1347	8.64	2359	6.57	1.15	14.5	69.6	76.38	150.0	4500.0	Clear
3	1407	8.75	2351	6.57	1.03	10.9	40.3	76.45	150.0	3000.0	Clear
4	1417	8.73	2354	6.60	1.05	8.7	26.6	76.40	150.0	1500.0	Clear
5	1427	8.47	2353	6.60	1.04	6.2	16.2	76.41	150.0	1500.0	Clear
6	1432	8.59	2350	6.60	1.05	6.0	16.3	76.45	150.0	750.0	Clear
7	1437	8.37	2356	6.57	1.02	6.7	15.3	76.43	150.0	750.0	Clear
8											
9											
10											

Stabilized: ~~Yes~~ No

Total Volume Removed: 12,750.0 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 4th Qtr 2019
Sample ID: Blue 13
Sampling Personal: Jerry Myers

Weather Conditions: Temp: 20°F Wind: NW 5-10 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:	104.19	ft
Total Well Depth:	116.65	ft
Well Volume:	7.7	liters
Depth to Top of Pump:	113.78	ft
Water Level After Sample:	111.16	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	(No)	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	10	sec.
PSI:	100	

Purge Date:	4 Nov 19	Time Purging Began:	1057 (am/pm)
Well Purged Dry?	(Yes) No	Time Purged Dry:	1142 (am/pm)
Sample Date:	5 Nov 19	Time of Sampling:	1025 (am/pm)

Bottle List: 1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1102	8.65	6794	7.06	3.24	-59.9	571.0	106.90	200.0	1000.0	Partly Cloudy
2	1122	7.35	6691	7.02	3.52	-18.6	469.0	110.57	200.0	4000.0	Partly Cloudy
3	1142	6.77	6734	7.05	4.26	-10.6	378.0	113.78	200.0	4000.0	Partly Cloudy
4											
5											
6											
7											
8										recharge	
9	1020	Purged well for	5 min to	clear	the line			108.52	200.0	~~5000~~	
10	1025	7.05	6866	7.11	4.50	19.2	1050	110.21		~~1000.0~~	Clear

Stabilized: Yes (No)

Total Volume Removed: ~~10000~~ 10,000.0 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 4th Qtr 2019
Sample ID: Blue 14
Sampling Personal: Jerry Flery

Weather Conditions: Temp: 25 °F Wind: S @ 5-10 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:	74.68	ft
Total Well Depth:	87.00	ft
Well Volume:	—	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	75.64	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder
Sampling Method:	Bladder
Dedicated Equip?:	Yes ~~No~~
Duplicate Sample?:	Yes ~~No~~
Duplicate Sample ID:	✓

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	~~70~~	

Purge Date:	5 Nov 19	Time Purging Began:	1345 am/pm
Well Purged Dry?	Yes ~~No~~	Time Purged Dry:	— am/pm
Sample Date:	5 Nov 19	Time of Sampling:	1505 am/pm

Bottle List: 1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1350	6.53	5121	6.75	5.34	5.7	129.0	75.22	100.0	500.0	Partly Cloudy
2	1420	7.08	5176	6.65	~~6~~ 1.52	12.2	124.0	75.50	100.0	3000.0	Partly Cloudy
3	1450	7.32	5167	6.64	1.52	18.9	29.3	75.56	100.0	3000.0	Clear
4	1455	6.86	5169	6.66	1.58	18.4	30.7	75.62	100.0	500.0	Clear
5	1500	6.89	5177	6.66	1.63	18.9	28.9	75.62	100.0	500.0	Clear
6	1505	6.92	5178	6.66	1.68	19.5	27.6	75.63	100.0	500.0	Clear
7											
8											
9											
10											

Stabilized: ~~Yes~~ No

Total Volume Removed: 8,000.0 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 4th Qtr 2019
Sample ID: Blue 15
Sampling Personal: Jerry Hoy

Weather Conditions: Temp: 25 °F Wind: S @ 5-10 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:	72.51	ft
Total Well Depth:	87.85	ft
Well Volume:	—	liters
Depth to Top of Pump:	—	ft
Water Level After Sample:	72.62	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes (No)		
Duplicate Sample?:	Yes (No)		
Duplicate Sample ID:			

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	90	

Purge Date:	5 Nov 19	Time Purging Began:	1235 am/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	5 Nov 19	Time of Sampling:	1325 am/pm

Bottle List:	1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	Pumping Rate	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	mL/min		clear, partly cloudy, cloudy
1	1240	6.80	3342	6.67	5.17	13.9	37.5	72.74	100.0	500.0	Clear
2	1310	8.07	3176	6.57	2.08	23.4	11.7	72.63	100.0	3000.0	Clear
3	1315	7.76	3180	6.63	1.74	22.5	9.01	72.60	100.0	500.0	Clear
4	1320	7.78	3182	6.63	1.79	22.9	8.62	72.61	100.0	500.0	Clear
5	1325	7.88	3168	6.63	1.79	23.2	8.42	72.63	100.0	500.0	Clear
6											
7											
8											
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 5,000.0 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: 4th Qtr 2019
Sample ID: Blue 16
Sampling Personal: Jeremy Mayer

Weather Conditions: Temp: 20 °F Wind: S @ 5-10 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:	70.50 ft
Total Well Depth:	97.60 ft
Well Volume:	— liters
Depth to Top of Pump:	— ft
Water Level After Sample:	70.66 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	(No)	
Duplicate Sample?:	Yes	~~No~~	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	90	

Purge Date:	5 Nov 19	Time Purging Began:	1055 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	5 Nov 19	Time of Sampling:	1215 am/(pm)

Bottle List: 1L Raw, 500mL Nitric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, partly cloudy, cloudy
1	1100	7.46	2068	6.68	3.95	48.0	739.0	70.55	100.0	500.0	~~Partly~~ Cloudy
2	1130	8.44	2048	6.60	0.87	43.6	137.0	70.54	100.0	3000.0	Partly Cloudy
3	1200	8.63	2058	6.62	0.72	43.9	88.1	70.65	100.0	3000.0	Clear
4	1205	8.55	2051	6.63	0.70	43.4	77.5	70.65	100.0	500.0	Clear
5	1210	8.67	2052	6.63	0.70	43.5	72.4	70.67	100.0	500.0	Clear
6	1215	8.60	2054	6.63	0.71	43.4	75.2	70.65	100.0	500.0	Clear
7											
8											
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 8000.0 mL

Comments:

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
OTP Coyote - Blue Pit CCR	4th Qtr 2019	82-3201

Report To:	Otter Tail Power	**Carbon Copy:**	**Name of Sampler(s):**
Attn:	Josh Hollen	Attn:	Jeremy Meyer
Address:	PO Box 496	Address:	
	Fergus Falls, MN 56538-0496		
phone:			
email:	jhollen@otpco.com		

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Appearance (Clear, Partly Cloudy, Cloudy)	1 liter	500mL Nitric	500mL Nitric (filtered)	250mL Sulfuric				Temp (°C)	Spec. Cond.	pH	Analysis Required
W4535	FB Blue	5 Nov 19	NA	W	—	X	X						NA	NA	NA	OTP CCR Appendix 3
W4536	Blue 6	5 Nov 19	1040	GW	Clear	X	X						7.70	2098	6.64	
W4537	Blue 7/MS7/MSD7	4 Nov 19	1437	GW	Clear	3	3						8.37	2356	6.57	
W4538	Blue 13	5 Nov 19	1025	GW	Clear	X	X						7.05	6866	7.11	
W4539	Blue 14	5 Nov 19	1505	GW	Clear	X	X						6.92	5178	6.66	
W4540	Blue 15	5 Nov 19	1325	GW	Clear	X	X						7.88	3168	6.63	
W4541	Blue 16	5 Nov 19	1215	GW	Clear	X	X						8.60	2054	6.63	

Comments:

NB 6 Nov 19 (A)

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1	5 Nov 19 1650	Log In ~~Walk In #2~~	~~0.4~~ 0.6 TM562 / TM588
2			

Received by:	
Name:	Date/Time
NBuchmann	5 Nov 19 1650