



2018 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Blue Pit Area

Coyote Station

Beulah, North Dakota

Prepared for
Otter Tail Power Company

January 2019

2018 CCR Annual Groundwater Monitoring and Corrective Action Report

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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 Coyote Station, a coal-fired generation unit near Beulah, North Dakota (Figure 1). The Blue Pit is an existing Coal Combustion Residuals (CCR) landfill at Coyote Station 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 CCR management unit (Blue Pit) is shown on Figure 1.

This 2018 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Blue Pit Area at Coyote Station (Site).

1.1 Purpose

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

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

1.2 Status of the Groundwater Monitoring and Corrective Action Program

The 2017 Annual Groundwater Monitoring and Corrective Action Report, Blue Pit Area (Barr, 2018) documented the results of the baseline groundwater monitoring. The evaluation of groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III began on October 17, 2017 and continued in 2018.

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 CCR unit for 2018. 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 2019 are described in Section 2.4.

2.1 Groundwater Monitoring System

2.1.1 Documentation

Figure 1 shows an aerial image of the CCR unit and all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, that are part of the groundwater monitoring program, as required by §257.90(e)(1). Further details on the monitoring system and the CCR unit 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 2018.

2.2 Monitoring and Analytical Results

A total of 12 (six monitoring wells and two sampling events) groundwater samples were collected and analyzed for the constituents listed in Appendix III (Part 257) in 2018 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 in Appendix A.

2.3 Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program during 2018:

- Completed semiannual detection monitoring sampling for each background and downgradient well.
- Determined, pursuant to § 257.93(h), that a statistically significant increase over background levels did not occur for any of the constituents listed in Appendix III at any downgradient monitoring well.

No problems were encountered during the reporting period.

2.4 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2019:

- Evaluate analytical results from the 2019 semiannual detection monitoring events for statistically significant increases (SSIs) according to the CCR Groundwater Sampling and Analysis Plan (McCain, 2017).
- Continue the groundwater monitoring program in accordance with the CCR rule.

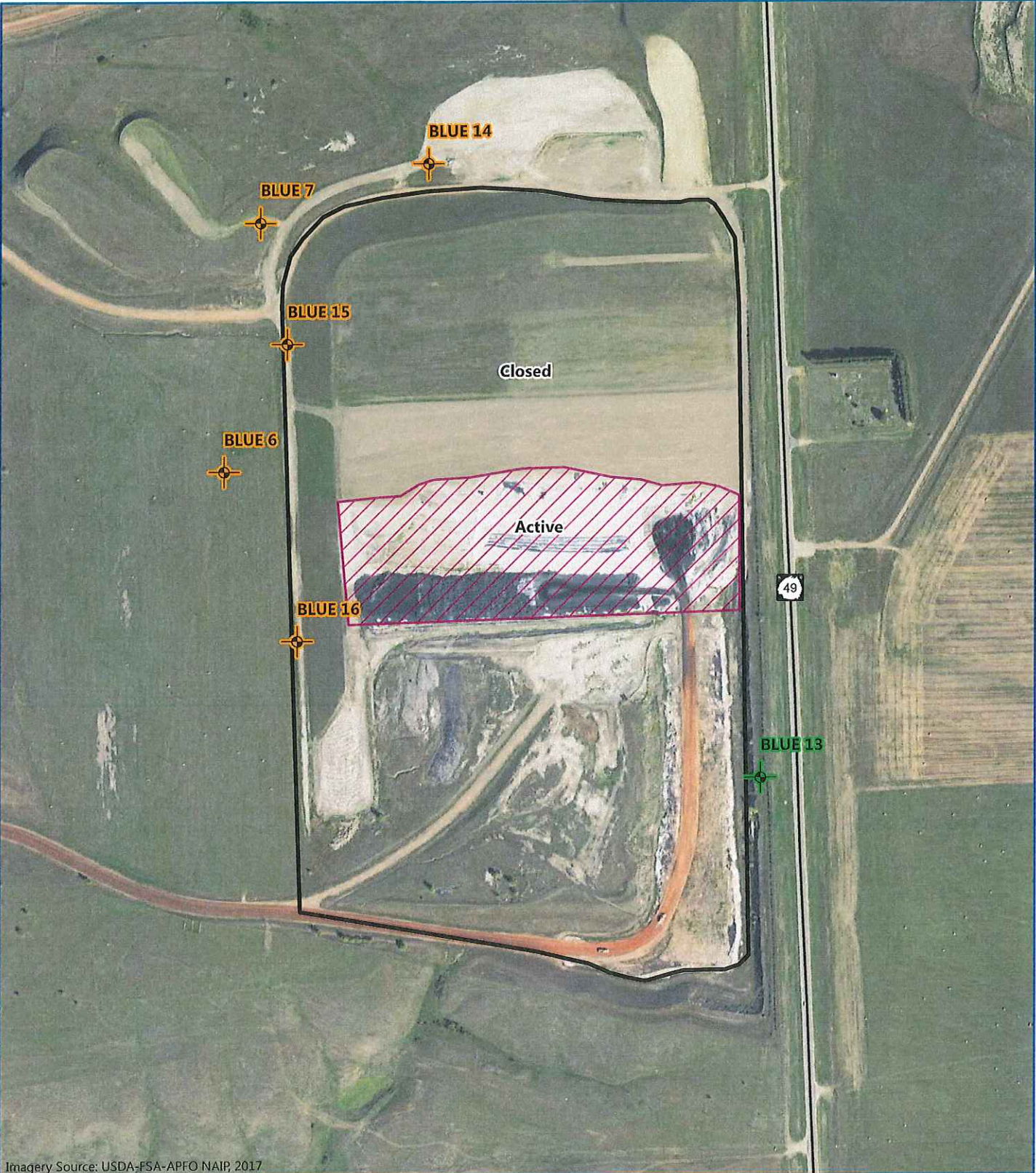
3.0 References

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

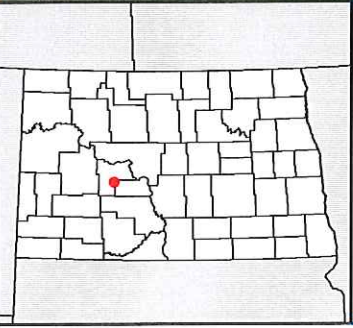
Barr, 2016. Groundwater Monitoring System Report, Coyote Station Blue Pit Area. Prepared for Otter Tail Power Company. November 2016.




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.

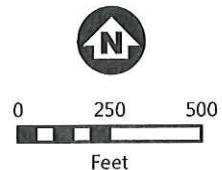
Figures



Imagery Source: USDA-FSA-APFO NAIP, 2017



-  Upgradient Monitoring Well
-  Downgradient Monitoring Well
-  Blue Pit



SITE LOCATION
Blue Pit Area
Coyote Station
Otter Tail Power Company
Beulah, North Dakota

FIGURE 1

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.mvttl.com



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201882-0403
Client: Ottertail Power Company
Location: Coyote Station
Project Identification: CCR Blue Pit
Event & Year: February 2018
MVTL Laboratory Identifications: 18-W292 through 18-W298

Page 1 of 1

Sample Identification	MVTL Laboratory #
Field Blank (FB)	18-W292
Blue 6	18-W293
Blue 7	18-W294
Blue 13	18-W295
Blue 14	18-W296
Blue 15	18-W297
Blue 16	18-W298

I. RECEIPT

- All samples were received at the laboratory on 1 Mar 18 at 1607.
- 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 0.3°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

- Approved methodology was followed for all sample analyses.

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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 8 Mar 18
Claudette Carroll - MVTL Bismarck Laboratory Manager

Quality Control Report

Lab IDs: 18-W292 to 18-W298

Project: OTP Coyote-Blue Pit CCR

Work Order: 201882-0403

Page: 1 of 1

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD Limit (<=)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Total mg/l	0.40	108	80-120	0.400	18-W285	< 0.1	105	75-125	0.42	0.43	108	2.4	-	-	< 0.1
	0.40	110	80-120	0.400	18-W294	0.36	95	75-125	0.74	0.76	100	2.7	-	-	< 0.1
				0.400	18-W297	0.47	93	75-125	0.84	0.86	98	2.4	-	-	< 0.1
Calcium - Total mg/l	20.0	110	80-120	100	18W285q	< 1	103	75-125	103	102	102	1.0	-	-	< 1
	20.0	110	80-120	100	18W294q	144	94	75-125	238	236	92	0.8	-	-	< 1
				500	18W297q	155	102	75-125	665	670	103	0.7	-	-	< 1
				100	18W301q	108	96	75-125	204	204	96	0.0	-	-	< 1
Chloride mg/l	30.0	101	80-120	30.0	18-W294	11.4	110	80-120	44.5	42.6	104	4.4	-	-	< 1
	30.0	101	80-120										-	-	< 1
Fluoride mg/l	0.50	98	90-110	0.500	18-W294	0.23	102	80-120	0.74	0.73	100	1.4	-	-	< 0.1
				0.500	18-W301	0.24	104	80-120	0.76	0.77	106	1.3	-	-	< 0.1
pH units	-	-	-	-	-	-	-	-	7.2	7.2	-	0.0	-	-	-
	-	-	-	-	-	-	-	-	7.3	7.4	-	1.4	-	-	-
Sulfate mg/l	100	106	80-120	500	18-W294	865	117	80-120	1450	1330	93	8.6	-	-	< 5
	100	110	80-120	4000	18-W301	802	120	80-120	5620	5450	116	3.1	-	-	< 5
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	1770	1800	-	1.7	-	-	< 10
	-	-	-	-	-	-	-	-	1790	1790	-	0.0	-	-	< 10

Approved by: C. Camp
 8 Mar 18



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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Mar 18
Lab Number: 18-W292
Work Order #: 82-0403
Account #: 006106
Date Sampled: 1 Mar 18
Date Received: 1 Mar 18 16:07
Sampled By: MVTl Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: FB Blue

Temp at Receipt: 0.3C

Event and Year: February 2018

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Lab, pH, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

Approved by: Claudette K. Carroll (signature)
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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www.mvttl.com



CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Mar 18
Lab Number: 18-W296
Work Order #: 82-0403
Account #: 006106
Date Sampled: 28 Feb 18 16:21
Date Received: 1 Mar 18 16:07
Sampled By: MVT Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: Blue 14

Temp at Receipt: 0.3C

Event and Year: February 2018

Table with 6 columns: Analyte, As Received Result, Method, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Field pH, Lab, pH, Field Temperature, Field Conductivity, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

Approved by: Claudette K. Carroll (handwritten signature) 8 Mar 18 (handwritten date)

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

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

Report Date: 7 Mar 18
 Lab Number: 18-W297
 Work Order #: 82-0403
 Account #: 006106
 Date Sampled: 1 Mar 18 13:51
 Date Received: 1 Mar 18 16:07
 Sampled By: MVTl Field Services

Project Name: OTP Coyote-Blue Pit CCR

PO #: 48895

Sample Description: Blue 15

Temp at Receipt: 0.3C

Event and Year: February 2018

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	1 Mar 18	SVS
Field pH	6.63	s.u.	0.1	SM 4500 H+ B	1 Mar 18 13:51	DJN
Lab, pH	* 6.9	s.u.	0.1	SM4500 H+ B	2 Mar 18 17:00	SVS
Field Temperature	8.18	Degrees C	0.1	SM 2550B	1 Mar 18 13:51	DJN
Field Conductivity	3825	umhos/cm	1	EPA 120.1	1 Mar 18 13:51	DJN
Fluoride	0.18	mg/l	0.10	SM4500-F-C	2 Mar 18 17:00	SVS
Sulfate	1310	mg/l	5.00	ASTM D516-07	6 Mar 18 11:28	RAG
Chloride	10.5	mg/l	1.0	SM4500-Cl-E	2 Mar 18 13:44	RAG
Total Dissolved Solids	2730	mg/l	10	I1750-85	2 Mar 18 10:29	SVS
Calcium - Total	155	mg/l	1.0	6010D	5 Mar 18 10:50	SZ
Boron - Total	0.47	mg/l	0.10	6010D	5 Mar 18 12:11	BT

* Holding time exceeded

Approved by:

Claudette K. Carroll

CC
8 Mar 18

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Mar 18
Lab Number: 18-W298
Work Order #: 82-0403
Account #: 006106
Date Sampled: 1 Mar 18 11:25
Date Received: 1 Mar 18 16:07
Sampled By: MVT Field Services

Project Name: OTP Coyote-Blue Pit CCR

Sample Description: Blue 16

PO #: 48895

Event and Year: February 2018

Temp at Receipt: 0.3C

Table with 6 columns: Analyte, As Received Result, Method, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Field pH, Lab pH, Field Temperature, Field Conductivity, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

Approved by: Claudette K. Carroll (signature) 8 Mar 18 (signature)
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: **OTP Coyote**
Event: **Feb 2018**
Sample ID: **Byreb**
Sampling Personal: **Dawn Peterson**

Weather Conditions: Temp: **27 °F** Wind: **5-10** Precip: **Sunny/Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Grout Seal Intact?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Visible
Repairs Necessary:	
Casing Diameter:	2"
Water Level Before Purge:	67.23 ft
Total Well Depth:	79.15 ft
Well Volume:	7.4 liters
Depth to Top of Pump:	76.07 ft
Water Level After Sample:	73.06 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: 25 / sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI: 80
Duplicate Sample ID:		
Purge Date:	27 Feb 18	Time Purging Began: 0950 am/pm
Well Purged Dry?	Yes No	Time Purged Dry: 1035 am/pm
Sample Date:	28 Feb 18	Time of Sampling: 1109 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	0955	2694	6.61	2.46	45.1	71000	69.57	200	1000	Turbid
2	1010	2683	6.64	1.68	36.1	151	74.52	200	3000	Slightly turbid
3	1025	2518	6.62	2.53	38.7	367	75.97	200	3000	Turbid
4	1035	2539	6.61	1.87	40.6	359	Bottom of pump	200	2000	Turbid
5										
6										
7										
8										
9	1104	Purged for 5 min before sampling					67.40			
10	1109	2838	6.61	2.36	47.3	824	68.68	100	570	Cloudy
Total Volume Removed: 4500 mL										
Stabilized:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									

Comments:



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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: Feb 2018
Sample ID: Blwy 7
Sampling Personal: Dallen Williams

Weather Conditions: Temp: 35 °F Wind: W 15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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 type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Repairs Necessary:	<u>Not Visible</u>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>84.87</u>	ft
Total Well Depth:	<u>97.62</u>	ft
Well Volume:	<u>7.9</u>	liters
Depth to Top of Pump:	<u>94.82</u>	ft
Water Level After Sample:	<u>84.95</u>	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 type="checkbox"/> No <input checked="" type="checkbox"/>	Recover: <u>55</u> sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PSI: <u>90</u>
Duplicate Sample ID:	<u>MS / MS</u>	
Purge Date:	<u>28 Feb 18</u>	Time Purging Began: <u>1320</u> am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: <u>am/pm</u>
Sample Date:	<u>28 Feb 18</u>	Time of Sampling: <u>1400</u> am/pm
	<u>3x</u>	<u>3x</u>
Bottle List:	<u>1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric</u>	
	<u>3x</u>	<u>3x</u>

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	<u>7.91</u>	<u>2584</u>	<u>6.97</u>	<u>0.80</u>	<u>91.4</u>	<u>52.5</u>	<u>84.93</u>	<u>140</u>	<u>700</u>	<u>clear</u>
2	<u>8.26</u>	<u>2593</u>	<u>6.94</u>	<u>0.42</u>	<u>13.9</u>	<u>56.7</u>	<u>84.93</u>	<u>140</u>	<u>2800</u>	<u>clear</u>
3	<u>8.23</u>	<u>2616</u>	<u>6.91</u>	<u>0.38</u>	<u>14.3</u>	<u>59.3</u>	<u>84.95</u>	<u>140</u>	<u>700</u>	<u>clear</u>
4	<u>8.29</u>	<u>2654</u>	<u>6.88</u>	<u>0.35</u>	<u>14.5</u>	<u>60.7</u>	<u>84.95</u>	<u>140</u>	<u>700</u>	<u>clear</u>
5	<u>8.28</u>	<u>2674</u>	<u>6.87</u>	<u>0.34</u>	<u>14.7</u>	<u>57.3</u>	<u>84.95</u>	<u>140</u>	<u>700</u>	<u>clear</u>
6										
7										
8										
9										
10										

Total Volume Removed: 5600 mL

Stabilized: Yes No

Comments:



Field Datasheet

Groundwater Assessment

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

Company: OTP Coyote
Event: Feb 2018
Sample ID: Blue 13
Sampling Personal: Darren Nieswanger

Weather Conditions: Temp: 30 °F Wind: SW 13 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	No
Well Labeled?	Yes	No
Casing Straight?	Yes	No
Grout Seal Intact?	Yes	No
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	103.62	ft
Total Well Depth:	115.50	ft
Well Volume:	6.0	liters
Depth to Top of Pump:	114.97	ft
Water Level After Sample:	112.14	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 5 sec.
Dedicated Equip?:	Yes	Recover: 25 55 sec.
Duplicate Sample?:	Yes	PSI: 100 100
Duplicate Sample ID:		
Purge Date:	27 Feb 18	Time Purging Began: 1058 am/pm
Well Purged Dry?:	Yes	Time Purged Dry: 1216 am/pm
Sample Date:	28 Feb 19	Time of Sampling: 1215 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	1103	688	7.07	6.78	210	869	105.12	200	1000	Partly cloudy
2	1118	Had trouble with pump								
3	1126	Started up again					105.63			
4	1131	5769	7.02	9.63	22.8	823	107.02	200	1000	Partly cloudy
5	1146	5826	6.78	4.78	35.7	176	111.69	200	3000	Partly cloudy
6	1201	6127	6.95	4.68	33.0	525	114.34	200	3000	Partly cloudy
7	1216	7.13	7.06	2.24	24.4	153	114.97	200	3000	Partly cloudy
8							OT pump			
9	1210	purged for 5 min before sampling					106.59			
10	1215	6567	7.00	2.6	20.5	130	107.68	100	500	Partly cloudy

Total Volume Removed: 11,500 mL

Stabilized: Yes No

Comments:

AT 1118 the pump was having problems, had to switch the pump out.

* 27 Feb 18 DN



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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote

Event: Feb 2018

Sample ID: Blue 14

Sampling Personal: Darren Piskway

Weather Conditions: Temp: 37 °F Wind: W 15 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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
Repairs Necessary:	<u>Not Visible</u>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>80.26</u>	ft
Total Well Depth:	<u>87.00</u>	ft
Well Volume:	<u>4.2</u>	liters
Depth to Top of Pump:	<u>84.20</u>	ft
Water Level After Sample:	<u>82.13</u>	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>5</u>
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: <u>55</u>
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI: <u>80</u>
Duplicate Sample ID:		
Purge Date:	<u>28 Feb 18</u>	Time Purging Began: <u>1531</u> am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: <u>1621</u> am/pm
Sample Date:	<u>28 Feb 18</u>	Time of Sampling: <u>1621</u> 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	1536 7.15	6459	6.87	1.48	24.4	33.0	80.74	100	500	clear
2	1551 7.61	6475	6.84	0.73	27.8	24.7	81.03	100	1500	clear
3	1556 7.62	6478	6.84	0.58	29.5	26.6	81.10	100	500	clear
4	1601 7.12	6430	6.85	0.47	30.1	24.8	81.17	100	500	clear
5	1606 7.46	6360	6.84	0.36	30.8	20.2	81.21	100	500	clear
6	1611 7.28	6316	6.84	0.35	31.2	11.4	81.34	100	500	clear
7	1616 7.01	6291	6.84	0.35	31.5	11.1	81.36	100	500	clear
8	1621 6.72	6236	6.85	0.34	31.8	10.6	81.39	100	500	clear
9										
10										

Total Volume Removed: 5000 mL

Stabilized: Yes No

Comments:



Field Datasheet

Groundwater Assessment

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

Company: OTP Coyote
Event: Feb 2018
Sample ID: Blue 15
Sampling Personal: Dan N. Swag

Weather Conditions: Temp: 36 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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
Repairs Necessary:	<u>Not Visible</u>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>77.87</u>	ft
Total Well Depth:	<u>87.87</u>	ft
Well Volume:	<u>6.2</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>81.86</u>	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 checked="" type="checkbox"/> No <input type="checkbox"/>	PSI: <u>80</u>
Duplicate Sample ID:	<u>—</u>	
Purge Date:	<u>March 18</u>	Time Purging Began: <u>12:36</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>March 18</u>	Time of Sampling: <u>1:35</u> 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	8.02	3728	6.68	1.00	25.0	94.9	81.21	100	500	partly cloudy
2	8.05	3808	6.62	0.48	28.6	26.5	81.38	100	2000	clear
3	8.05	3819	6.60	0.35	29.3	13.8	81.41	100	1500	clear
4	8.12	3826	6.62	0.34	28.9	7.92	81.48	100	1500	clear
5	8.22	3824	6.63	0.31	29.2	4.88	81.48	100	500	clear
6	8.25	3827	6.63	0.32	29.3	4.91	81.51	100	500	clear
7	8.09	3827	6.63	0.31	29.6	5.38	81.56	100	500	clear
8	8.18	3825	6.63	0.30	29.8	5.28	81.60	100	500	clear
9										
10										

Total Volume Removed: 7500 mL

Stabilized: Yes No

Comments:



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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: Feb 2018
Sample ID: Blue 16
Sampling Personal: Darren Ferrara

Weather Conditions: Temp: 2 °F Wind: 8.5 Precip: Sunny/Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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
Repairs Necessary:	<u>Not Visible</u>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>80.48</u>	ft
Total Well Depth:	<u>97.64</u>	ft
Well Volume:	<u>10.6</u>	liters
Depth to Top of Pump:	<u>93.46</u>	ft
Water Level After Sample:	<u>80.55</u>	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	Recover: <u>55</u> sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	PSI: <u>90</u>
Duplicate Sample ID:		
Purge Date:	<u>Mar 18</u>	Time Purging Began: <u>0940</u> am/pm
Well Purged Dry?:	<input checked="" type="checkbox"/> Yes	Time Purged Dry: <u>am/pm</u>
Sample Date:	<u>Mar 18</u>	Time of Sampling: <u>125</u> 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	9945 7.77	2987	6.68	0.92	35.2	243	80.53	100	500	clear, partly cloudy, cloudy
2	1005 7.25	2997	6.69	0.59	29.0	319	80.53	100	2000	partly cloudy
3	1025 7.46	3003	6.67	0.42	30.2	242	80.55	100	2000	PC
4	1040 7.33	3022	6.64	0.74	31.8	140	80.55	100	1500	PC
5	1055 7.56	3031	6.62	0.58	35.1	84.8	80.55	100	1500	PC
6	110 7.55	3034	6.62	0.43	34.8	51.7	80.55	100	1500	PC
7	116 7.75	3032	6.63	0.45	35.1	41.3	80.55	100	500	clear
8	1120 8.07	3034	6.63	0.44	35.0	41.7	80.55	100	500	clear
9	1125 7.77	3035	6.63	0.44	35.1	38.2	80.55	100	500	clear
10										

Stabilized: Yes No

Total Volume Removed: 10500 mL

Comments:



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

Chain of Custody Record

Project Name: OTP Coyote - Blue Pit CCR	Event: Feb 2018	Work Order Number: 82-0403
Report To: Attn: Josh Hollen Address: PO Box 496 Fergus Falls, MN 56538-0496 phone: ihollen@otpco.com	Carbon Copy: Attn: Address:	Name of Sampler(s): Darron Nielsen

Lab Number	Sample ID	Sample Information			Bottle Type					Field Parameters			Analysis Required
		Date	Time	Sample Type	Appearance (Clear, Partly Cloudy, Cloudy)	1 liter	500ml Nitric	500ml Nitric (filtered)	250ml Sulfuric	Temp (°C)	Spec. Cond.	PH	
W292	FB Blue	1 March 18	NA	W		X	X			NA	NA	NA	
W293	Blue 6	28 Feb 18	1109	GW	Cloudy	X	X			8.56	2838	6.61	
W294	Blue 7/MS7/MSD7	28 Feb 18	1400	GW	clear	3	3			8.28	2674	6.87	
W295	Blue 13	28 Feb 18	1215	GW	Partly cloudy	X	X			7.32	6567	7.00	
W296	Blue 14	28 Feb 18	1621	GW	Clear	X	X			6.72	6236	6.85	
W297	Blue 15	1 March 18	1351	GW	Clear	X	X			8.18	3825	6.63	
W298	Blue 16	1 March 18	1125	GW	Clear	X	X			7.77	3035	6.63	

OTP CCR Appendix 3

Comments:

Relinquished By: Name: <i>[Signature]</i>	Sample Condition: Location: Log #1 Walk In #2	Received by: Name: <i>[Signature]</i>
Date/Time: 1 March 18 1607	Temp (°C): 0.3 TMS62 / TMS88	Date/Time: 1 March 18 1607



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www.mvttl.com



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201882-2032
Client: Ottertail Power Company
Location: Coyote Station
Project Identification: CCR Blue Pit
Event & Year: August 2018
MVTL Laboratory Identifications: 18-W2525 through 18-W2531

Page 1 of 1

Sample Identification	MVTL Laboratory #
FB Blue	18-W2525
Blue 6	18-W2526
Blue 7	18-W2527
Blue 13	18-W2528
Blue 14	18-W2529
Blue 15	18-W2530
Blue 16	18-W2531

I. RECEIPT

- All samples were received at the laboratory on 9 Aug 18 at 1520.
- 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 1.5°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.

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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 28 Aug 18
Claudette Carroll - MVTL Bismarck Laboratory Manager

Quality Control Report

Lab IDs: 18-W2525 to 18-W2531

Project: OTP Coyote - Blue Pit

Work Order: 201882-2032

Page: 1 of 1

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike		Matrix Spike Rec %	Matrix Spike Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
						Orig Result	Result										
Boron - Total mg/l	0.40	110	80-120	0.400 0.400	18-W2527 18-W2539	0.40 2.33	0.85 2.68	112 88	75-125 75-125	0.85 2.68	0.83 2.73	108 100	2.4 1.8	20 20	- -	- -	<0.1 <0.1
Calcium - Total mg/l	20.0 20.0 20.0	101 102 105	80-120 80-120 80-120	100 100 100	18D2882q 18W2527q 18W2534q	27.2 170 164	122 262 251	95 92 87	75-125 75-125 75-125	122 262 251	122 258 258	95 88 94	0.0 1.5 2.8	20 20 20	- - -	- - -	<1 <1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0	92 90	80-120 80-120	30.0 30.0	18-W2527 18-W2534	7.7 8.0	35.0 33.2	91 84	80-120 80-120	35.0 33.2	34.3 36.7	89 96	2.0 10.0	20 20	- -	- -	<1 <1
Fluoride mg/l	0.50	102	90-110	0.500 0.500	18-W2527 18-W2547	0.20 1.03	0.71 1.46	102 86	80-120 80-120	0.71 1.46	0.70 1.46	100 86	1.4 0.0	20 20	- -	- -	<0.1 <0.1
pH units	- -	- -	- -	- -	- -	- -	- -	- -	- -	7.0 7.1	7.0 7.2	- -	0.0 1.4	20 20	- -	- -	- -
Sulfate mg/l	100 100	115 108	80-120 80-120	1000 500	18-W2527 18-W2534	1010 926	1900 1390	89 93	80-120 80-120	1900 1390	1890 1400	88 95	0.5 0.7	20 20	- -	- -	<5 <5
Total Dissolved Solids mg/l	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	2030 2070 3090	2040 2060 3140	- - -	0.5 0.5 1.6	20 20 20	- - -	- - -	<10 <10 <10

Approved by: C. Gued
 25 Aug 18



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



CERTIFICATE of ANALYSIS - CCR

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

Report Date: 28 Aug 18
Lab Number: 18-W2525
Work Order #:82-2032
Account #: 006106
Date Sampled: 9 Aug 18
Date Received: 9 Aug 18 15:20
Sampled By: MVTL Field Services

Project Name: OTP Coyote - Blue Pit

PO #: 48895

Sample Description: FB Blue

Temp at Receipt: 1.5C

Event and Year: Aug 2018

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Lab, pH, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

CL

Approved by: Claudette K. Carroll 28 Aug 18

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: 28 Aug 18
Lab Number: 18-W2526
Work Order #: 82-2032
Account #: 006106
Date Sampled: 9 Aug 18 7:21
Date Received: 9 Aug 18 15:20
Sampled By: MVTL Field Services

Project Name: OTP Coyote - Blue Pit

PO #: 48895

Sample Description: Blue 6

Temp at Receipt: 1.5C

Event and Year: Aug 2018

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Field pH, Lab, pH, Field Temperature, Field Conductivity, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

Approved by: Claudette K. Carroll (signature) CC 28 Aug 18
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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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 28 Aug 18
 Lab Number: 18-W2527
 Work Order #: 82-2032
 Account #: 006106
 Date Sampled: 8 Aug 18 14:02
 Date Received: 9 Aug 18 15:20
 Sampled By: MVTL Field Services

Project Name: OTP Coyote - Blue Pit

PO #: 48895

Sample Description: Blue 7

Temp at Receipt: 1.5C

Event and Year: Aug 2018

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	9 Aug 18	SVS
Field pH	6.57	s.u.	0.1	SM 4500 H+ B	8 Aug 18 14:02	DJN
Lab, pH	* 7.0	s.u.	0.1	SM4500 H+ B	10 Aug 18 17:00	SVS
Field Temperature	11.8	Degrees C	0.1	SM 2550B	8 Aug 18 14:02	DJN
Field Conductivity	2876	umhos/cm	1	EPA 120.1	8 Aug 18 14:02	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	13 Aug 18 17:00	SVS
Sulfate	1010	mg/l	5.00	ASTM D516-07	15 Aug 18 13:57	EV
Chloride	7.7	mg/l	1.0	SM4500-C1-E	16 Aug 18 11:17	EV
Total Dissolved Solids	2030	mg/l	10	I1750-85	13 Aug 18 12:07	SVS
Calcium - Total	170	mg/l	1.0	6010D	15 Aug 18 9:34	SZ
Boron - Total	0.40	mg/l	0.10	6010D	13 Aug 18 14:47	SZ

* Holding time exceeded

Approved by: Claudette K. Carroll ^{CC} 28 Aug 18
 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: 28 Aug 18
Lab Number: 18-W2528
Work Order #:82-2032
Account #: 006106
Date Sampled: 9 Aug 18 8:19
Date Received: 9 Aug 18 15:20
Sampled By: MVTL Field Services

Project Name: OTP Coyote - Blue Pit

PO #: 48895

Sample Description: Blue 13

Temp at Receipt: 1.5C

Event and Year: Aug 2018

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Field pH, Lab, pH, Field Temperature, Field Conductivity, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

Approved by:

Claudette K. Carroll

CC
28 Aug 18

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: 28 Aug 18
Lab Number: 18-W2529
Work Order #: 82-2032
Account #: 006106
Date Sampled: 8 Aug 18 16:58
Date Received: 9 Aug 18 15:20
Sampled By: MVTL Field Services

Project Name: OTP Coyote - Blue Pit

Sample Description: Blue 14

PO #: 48895

Event and Year: Aug 2018

Temp at Receipt: 1.5C

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Metal Digestion, Field pH, Lab pH, Field Temperature, Field Conductivity, Fluoride, Sulfate, Chloride, Total Dissolved Solids, Calcium - Total, Boron - Total.

* Holding time exceeded

cc

Approved by: Claudette K. Carroll 28 Aug 18
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: OTP Coyote
Event: Aug 2018
Sample ID: Blue 6
Sampling Personal: Darren Wisniewsky

Weather Conditions: Temp: 55 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Grout Seal Intact?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Repairs Necessary:	—	
Casing Diameter:	2"	
Water Level Before Purge:	66.62 ft	
Total Well Depth:	79.10 ft	
Well Volume:	7.7 7.5 liters	
Depth to Top of Pump:	75.50 ft	
Water Level After Sample:	72.23 ft	
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>5</u> / <u>5</u> sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	Recover: <u>25</u> / <u>55</u> sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	PSI:
Duplicate Sample ID:	—	
Purge Date:	<u>8 Aug 18</u>	Time Purging Began: <u>0904</u> am/pm
Well Purged Dry?:	<u>Yes</u> No	Time Purged Dry: <u>1059</u> am/pm
Sample Date:	<u>9 Aug 18</u>	Time of Sampling: <u>0721</u> am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric 1L Raw, 500mL Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	0909	2673	6.39	0.65	33.0	77.0	68.14	200	1000	clear, partly cloudy, cloudy
2	0924	2653	6.45	1.72	-0.4	96.5	71.51	200	3000	partly cloudy
3	0939	2641	6.50	2.98	15.0	58.2	74.51	200	3000	PC
4	0954	2601	6.48	1.21	4.5	11.6	75.08	200	3000	PC
5	1009	2531	6.51	1.60	12.9	30.6	75.50	200	3000	cloudy
6							below pump			
7										
8										
9	0716						67.00			
10	0721						67.96	100	500	cloudy

Total Volume Removed: 13500 mL

Stabilized: Yes
Comments: * 8 Aug 18 10:00



Field Datasheet

Groundwater Assessment

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

Company: OTP Coyote
Event: Aug 2018
Sample ID: Blue 7
Sampling Personal: Darren Penney

Weather Conditions: Temp: 90 °F Wind: N10 Precip: Sunny/ Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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 type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Repairs Necessary:	<u>Not Visible</u>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>83.56</u>	ft
Total Well Depth:	<u>97.79</u>	ft
Well Volume:	<u>8.8</u>	liters
Depth to Top of Pump:	<u>94.74</u>	ft
Water Level After Sample:	<u>83.61</u>	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>55</u>
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: <u>55</u>
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI:
Duplicate Sample ID:	<u>MS, MSJ</u>	
Purge Date:	<u>8 Aug 18</u>	Time Purging Began: <u>1322</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: <u>am/pm</u>
Sample Date:	<u>8 Aug 18</u>	Time of Sampling: <u>1402</u> am/pm
	<u>3</u>	<u>3</u>
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric	
	<u>3</u>	<u>3</u>

Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	<u>13.97</u>	<u>2974</u>	<u>6.57</u>	<u>0.93</u>	<u>22.2</u>	<u>32.6</u>	<u>83.60</u>	<u>140</u>	<u>700</u>	<u>Clear</u>
2	<u>11.84</u>	<u>2948</u>	<u>6.56</u>	<u>0.20</u>	<u>44.7</u>	<u>42.8</u>	<u>83.61</u>	<u>140</u>	<u>2100</u>	<u>Clear</u>
3	<u>11.74</u>	<u>2897</u>	<u>6.56</u>	<u>0.18</u>	<u>-11.3</u>	<u>42.1</u>	<u>83.61</u>	<u>140</u>	<u>1400</u>	<u>Clear</u>
4	<u>11.85</u>	<u>2891</u>	<u>6.56</u>	<u>0.20</u>	<u>-11.8</u>	<u>38.6</u>	<u>83.61</u>	<u>140</u>	<u>700</u>	<u>Clear</u>
5	<u>11.75</u>	<u>2876</u>	<u>6.57</u>	<u>0.19</u>	<u>-8.4</u>	<u>39.4</u>	<u>83.61</u>	<u>140</u>	<u>700</u>	<u>Clear</u>
6										
7										
8										
9										
10										

Total Volume Removed: 5600 mL

Stabilized: Yes No

Comments:



Field Datasheet

Groundwater Assessment

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

Company: OTP Coyote
Event: Aug 2018
Sample ID: Blue 13
Sampling Personnel: Jason Alesunas

Weather Conditions: Temp: 58 °F Wind: Light Precip: Sunny/Partly Cloudy/Cloudy

Well Information

Well Locked?	<input checked="" type="checkbox"/> Yes	<input 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
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	104.46 ft	
Total Well Depth:	116.65 ft	
Well Volume:	7.6 liters	
Depth to Top of Pump:	115.45 ft	
Water Level After Sample:	111.78 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>25</u> <u>55</u> sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PSI:
Duplicate Sample ID:		
Purge Date:	<u>8 Aug 18</u>	Time Purging Began: <u>1030</u> am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry: <u>1120</u> am/pm
Sample Date:	<u>9 Aug 18</u>	Time of Sampling: <u>0819</u> 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	1035	6455	6.90	0.76	71.6	456	106.53	200	1000	clear, partly cloudy, cloudy
2	1250	5858	6.61	0.27	-10.5	106	110.72	200	3000	cloudy
3	1105	5827	6.60	0.38	0.8	406	112.91	200	2000	partly cloudy
4	1120	6253	6.79	0.34	1.8	480	115.45	200	3000	clear
5							below pump			cloudy
6										
7										
8										
9	0814	purged line					106.69	100		
10	0919	11.58	6.85	2.20	-7.8	657	108.08		500	cloudy

Total Volume Removed: ~~10,000~~ mL - 9,500 mL - 0.500 mL

Stabilized: Yes No
Comments:



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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: Aug 2018
Sample ID: Blue 14
Sampling Personal: Aaron A. Reynolds

Weather Conditions: Temp: 90 °F Wind: N10 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	No
Well Labeled?	Yes	No
Casing Straight?	Yes	No
Grout Seal Intact?	Yes	No
Repairs Necessary:	-	
Casing Diameter:	2"	
Water Level Before Purge:	80.08	ft
Total Well Depth:	86.99	ft
Well Volume:	4.3	liters
Depth to Top of Pump:	85.30	ft
Water Level After Sample:	83.31	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 5 sec.
Dedicated Equip?:	Yes (NO)	Recover: 55 sec.
Duplicate Sample?:	Yes (NO)	PSI:
Duplicate Sample ID:	-	
Purge Date:	8 Aug 18	Time Purging Began: 1538 am/pm
Well Purged Dry?:	Yes (NO)	Time Purged Dry:
Sample Date:	8 Aug 18	Time of Sampling: 1658 am/pm
Bottle List:	1L Raw, 500mL Nitric, 500mL Nitric (filtered), 250mL Sulfuric 1L Raw, 500mL Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	15.31	6412	6.67	0.42	26.0	66.2	80.47	100	500	partly cloudy
2	15.58	6369	6.68	0.10	26.7	43.0	81.16	100	1500	clear
3	16.13	6253	6.68	0.06	9.4	15.4	81.38	100	1500	clear
4	16.28	6109	6.67	0.06	8.6	8.05	81.87	100	1500	clear
5	16.43	5964	6.65	0.05	-0.6	5.54	82.16	100	1500	clear
6	16.48	5923	6.65	0.05	-2.9	6.16	82.43	100	500	clear
7	16.53	5933	6.65	0.05	-4.2	6.25	82.45	100	500	clear
8	16.58	5932	6.63	0.05	-4.8	6.67	82.53	100	500	clear
9										
10										

Stabilized: Yes
Comments:

Total Volume Removed: 8,000 mL



Field Datasheet

Groundwater Assessment

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

Company: OTP Coyote
Event: Aug 2018
Sample ID: Blue 15
Sampling Personnel: Darren Mesvany

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

Well Information		Bladder		Control Settings	
Well Locked?	Yes	Bladder	Purge:	5	sec.
Well Labeled?	Yes	Bladder	Recover:	55	sec.
Casing Straight?	Yes	Dedicated Equip?:	Yes	(No)	
Grout Seal Intact?	Yes	Duplicate Sample?:	Yes	(No)	
Repairs Necessary:		Duplicate Sample ID:			
Casing Diameter:	2"	Purging Method:			
Water Level Before Purge:	80.63 ft	Sampling Method:			
Total Well Depth:	87.87 ft	Dedicated Equip?:			
Well Volume:	4.5 liters	Duplicate Sample?:			
Depth to Top of Pump:	84.05 ft	Duplicate Sample ID:			
Water Level After Sample:	80.70 ft	Purge Date:	9 Aug 18	Time Purging Began:	0912 am/pm
Measurement Method:	Electric Water Level Indicator	Well Purged Dry?	Yes	Time Purged Dry:	am/pm
		Sample Date:	9 Aug 18	Time of Sampling:	1017 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	0917 12.51	3728	6.50	2.55	-15.4	34.6	80.73	100	500	clear
2	0932 12.87	3638	6.46	0.61	-16.5	4.29	80.70	100	1500	clear
3	0947 12.57	3796	6.45	0.45	-18.5	5.76	80.70	100	1500	clear
4	1002 13.05	3546	6.44	0.30	-20.9	2.82	80.70	100	1500	clear
5	1007 13.39	3536	6.44	0.28	-22.2	1.89	80.72	100	500	clear
6	1012 13.30	3528	6.44	0.25	-22.8	1.86	80.70	100	500	clear
7	1017 13.53	3525	6.44	0.30	-22.1	1.82	80.70	100	500	clear
8										
9										
10										

Total Volume Removed: 6500 mL

Stabilized: Yes

Comments:



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

Field Datasheet

Groundwater Assessment

Company: OTP Coyote
Event: Aug 2018
Sample ID: Blue 16
Sampling Personnel: Darren Niessing

Weather Conditions: Temp: 82 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Well Labeled?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Casing Straight?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Grout Seal Intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Repairs Necessary:	-	
Casing Diameter:	2"	
Water Level Before Purge:	<u>179.82</u>	ft
Total Well Depth:	<u>197.58</u>	ft
Well Volume:	<u>11.0</u>	liters
Depth to Top of Pump:	<u>91.03</u>	ft
Water Level After Sample:	<u>179.84</u>	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: <u>55</u>
Dedicated Equip?:	Yes <u>NO</u>	Recover: <u>55</u>
Duplicate Sample?:	Yes <u>NO</u>	PSI: <u>-</u>
Duplicate Sample ID:	-	
Purge Date:	<u>9 Aug 18</u>	Time Purging Began: <u>1103</u> am/pm
Well Purged Dry?:	Yes <u>NO</u>	Time Purged Dry: <u>-</u> am/pm
Sample Date:	<u>9 Aug 18</u>	Time of Sampling: <u>1223</u> 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. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	Pumping Rate mL/min	mL Removed	Description: Clarity, Color, Odor, Ect.
1	<u>15.18</u>	<u>2812</u>	<u>6.51</u>	<u>7.71</u>	<u>-6.7</u>	<u>338</u>	<u>79.84</u>	<u>100</u>	<u>500</u>	<u>cloudy</u>
2	<u>15.39</u>	<u>2839</u>	<u>6.48</u>	<u>0.58</u>	<u>-26.6</u>	<u>148</u>	<u>79.83</u>	<u>100</u>	<u>2000</u>	<u>Partly cloudy</u>
3	<u>16.19</u>	<u>2835</u>	<u>6.48</u>	<u>0.62</u>	<u>-20.7</u>	<u>66.1</u>	<u>79.84</u>	<u>100</u>	<u>2000</u>	<u>PC</u>
4	<u>16.26</u>	<u>2834</u>	<u>6.48</u>	<u>0.74</u>	<u>-28.2</u>	<u>56.0</u>	<u>79.84</u>	<u>100</u>	<u>1500</u>	<u>PC</u>
5	<u>16.78</u>	<u>2838</u>	<u>6.48</u>	<u>0.34</u>	<u>-30.0</u>	<u>54.3</u>	<u>79.84</u>	<u>100</u>	<u>500</u>	<u>PC</u>
6	<u>16.58</u>	<u>2837</u>	<u>6.48</u>	<u>0.30</u>	<u>-30.8</u>	<u>49.4</u>	<u>79.84</u>	<u>100</u>	<u>500</u>	<u>Clear</u>
7	<u>17.10</u>	<u>2835</u>	<u>6.48</u>	<u>0.36</u>	<u>-33.9</u>	<u>47.5</u>	<u>79.84</u>	<u>100</u>	<u>500</u>	<u>clear</u>
8	<u>16.34</u>	<u>2839</u>	<u>6.48</u>	<u>0.32</u>	<u>-36.8</u>	<u>45.1</u>	<u>79.84</u>	<u>100</u>	<u>500</u>	<u>clear</u>
9										
10										

Total Volume Removed: 9000 mL

Stabilized: Yes No

Comments:



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

Chain of Custody Record

Project Name: OTP Coyote - Blue Pit CCR	Event: Aug 2018	Work Order Number: 82-2032
Report To: Attn: Josh Hollen Address: PO Box 496 Fergus Falls, MN 56538-0496 phone: email: jhollen@otpc.com	Carbon Copy: Attn: Address:	Name of Sampler(s): <i>Parren Nieswong</i>

Lab Number	Sample ID	Date	Time	Sample Type	Appearance (Clear, Partly Cloudy, Cloudy)	Bottle Type			Field Parameters			Analysis Required
						1 liter	500ml Nitric	500ml Nitric (filtered)	250ml Sulfuric	Temp (°C)	Spec. Cond.	
W2525	FB Blue	9 Aug 18	NA	W	clear	X	X	X	NA	NA	NA	Analysis Required
W2526	Blue 6	9 Aug 18	0721	GW	cloudy	X	X	X	10.69	2541	6.51	
W2527	Blue 7MS7MSD7	8 Aug 18	1402	GW	clear	3	3		11.75	2876	6.57	
W2528	Blue 13	9 Aug 18	0819	GW	cloudy	X	X	X	11.58	6114	6.85	
W2529	Blue 14	8 Aug 18	1658	GW	clear	X	X	X	14.03	5932	6.65	OTP CCR Appendix 3
W2530	Blue 15	9 Aug 18	1017	GW	clear	X	X	X	13.53	3525	6.44	
W2531	Blue 16	9 Aug 18	1223	GW	clear	X	X	X	16.34	2839	6.48	

Comments:

Relinquished By: Name: <i>Parren Nieswong</i>	Date/Time 9 Aug 18 1520	Location: Log # Walk In #2	Sample Condition: Temp (°C) 1.5 TM562 / TM586
			9 Aug 18 1520

Received by: Name: <i>Parren Nieswong</i>	Date/Time 9 Aug 2018 1520
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