

2018 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Hoot Lake Plant Fergus Falls, Minnesota

Prepared for Otter Tail Power Company

January 2019

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2018 CCR Annual Groundwater Monitoring and Corrective Action Report

Hoot Lake Plant Fergus Falls, Minnesota

January 2019

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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 Hoot Lake Plant, a coal-fired generation unit in Fergus Falls, Minnesota (Figure 1). Coal combustion residuals (CCR) from plant operations are placed in an on-site landfill, referred to as the Ash Landfill. The Ash Landfill 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) for existing CCR landfills. The vicinity of the CCR unit (Ash Landfill) is shown on Figure 1.

This 2018 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Ash Landfill at the Hoot Lake Plant (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, Hoot Lake Plant (Barr, 2018) documented the results of the baseline groundwater monitoring. The evaluation of groundwater monitoring data for statistically significant increases over background levels for constituents listed in Appendix III from the CCR Rule began on October 17, 2017 and continued in 2018.

1.3 CCR Rule Requirements

This Annual Report was prepared in accordance with the requirements of §257.90(e) of the CCR Rule, as outlined in 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 2.1.1 Documentation
§257.90(e)(4)	Discuss any transition between monitoring programs	Section 2.2 Monitoring and Analytical Results
§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 2018 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, which 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 can be found in the *Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant* (Barr, 2016) on the plants website.

2.1.2 Changes to Monitoring System

The CCR groundwater monitoring system was unchanged in 2018.

2.2 Monitoring and Analytical Results

CCR Rule §257.94(b) requires collection of semiannual detection monitoring samples. The monitoring wells were sampled twice in 2018. During each event, all of the detection monitoring wells were successfully sampled per the CCR Groundwater Sampling and Analysis Plan (Carlson McCain, 2017). The samples were analyzed for the constituents listed in appendix III of Part 257. 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 through 2018:

- Spring monitoring was conducted in April. Results indicated potential statistically significant
 increases of pH in the sample from well S-14R and fluoride in the sample from well S-2A. Results
 of resampling conducted in June showed no statistically significant increases.
- Fall monitoring was conducted in October. Results indicated a potential statistically significant
 increase of total dissolved solids in the sample from well S-10R. Results of resampling conducted
 in November showed no statistically significant increases.

No problems were encountered during the report 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 Groundwater Statistical Analysis Plan (McCain, 2017).
- Continue the groundwater monitoring program in accordance with the CCR rule.

3.0 References

- Barr Engineering Co., January 2018. 2017 Annual Groundwater Monitoring and Corrective Action Report CCR Annual Monitoring Report, Hoot Lake Plant, Fergus Falls, Minnesota. Prepared for Otter Tail Power Company.
- Barr Engineering Co., 2016. Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant. Prepared for Otter Tail Power Company.
- Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan, Ash Landfill Hoot Lake Plant, Fergus Falls, Minnesota. Prepared for Otter Tail Power Company.

Figures



SITE MAP AND CCR GROUNDWATER MONITORING SYSTEM Hoot Lake Ash Landfill Otter Tail Power Company Fergus Falls, MN

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



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FINAL REPORT COMPLETION DATE: 18 May 18 AH

Date Reported: 18 May 2018

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0156 Account #: 006106 PO #: 48679

Project Name: HOOT LAKE PLANT

ield Service Manager/Date Reviewed send Sus

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 18 May 2018 Lab Number: 18-A18659 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 14:55 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH sulfate Chloride Solids, Total Dissolved	7.26 • 7.0 • 116 @ < 3 • 638	units units mg/L mg/L	1.00 1.0 5.0 3 10 0.500	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C	24 Apr 18 24 Apr 18 18 Apr 18 14:55 20 Apr 18 12:02 26 Apr 18 9:43 20 Apr 18 11:53 26 Apr 18 11:53	DK AKF KCJ MCS
Calcium Boron Fluoride	139.0 0.129 0.590 @	mg/L mg/L mg/L	0.100	SW6010C EPA 300.0	26 Apr 18 11:39 30 Apr 18 12:45	RMV

^{*} Holding Time Exceeded



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 18 May 2018 Lab Number: 18-A18660 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 12:05 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH sulfate Chloride Solids, Total Dissolved Calcium Boron Fluoride	7.34 * 7.1 81.1 @ 12.5 570 107.0 0.120 0.210 @	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.100	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	24 Apr 18 24 Apr 18 18 Apr 18 12:05 20 Apr 18 12:02 26 Apr 18 9:43 20 Apr 18 11:53 26 Apr 18 11:39 26 Apr 18 11:39 30 Apr 18 12:45	DK AKF KCJ MCS RMV RMV

* Holding Time Exceeded



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 18 May 2018 Lab Number: 18-A18661 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 14:57 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH Sulfate Chloride Solids, Total Dissolved Calcium Boron Fluoride	7,21 * 7.1 76.8 @ 11.5 553 114.0 < 0.1 0.210 @	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.1	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	24 Apr 18 24 Apr 18 18 Apr 18 14:57 20 Apr 18 12:02 26 Apr 18 9:43 20 Apr 18 13:54 23 Apr 18 11:53 26 Apr 18 11:39 26 Apr 18 11:39 30 Apr 18 12:45	DK AKF KCJ MCS RMV RMV

^{*} Holding Time Exceeded



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 18 May 2018 Lab Number: 18-A18662 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 12:55 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH sulfate Chloride Solids, Total Dissolved Calcium	7.45 • 7.1 • 60.2 @ 7.5 • 502 • 116.0	units units mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C	24 Apr 18 24 Apr 18 18 Apr 18 12:55 20 Apr 18 12:02 26 Apr 18 9:43 20 Apr 18 13:54 23 Apr 18 11:53 26 Apr 18 11:39 26 Apr 18 11:39	JMS JMS BS DK AKF KCJ MCS RMV
Boron Fluoride	< 0.1 0.340 @	mg/L mg/L	0.1	SW6010C EPA 300.0	30 Apr 18 12:45	RMV

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix
P = Due to sample quantity
P = Due to internal standard response
P = Due to sample quantity
P = Due to internal standard response
P = Due to sample quantity
P = Due to sample quanti



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 18 May 2018 Lab Number: 18-A18663 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 14:05 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH sulfate Chloride Solids, Total Dissolved Calcium	7.53 * 7.2 * 84.8 @ 5.5 582 131.0	units units mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C	24 Apr 18 24 Apr 18 18 Apr 18 14:05 20 Apr 18 12:02 26 Apr 18 9:43 20 Apr 18 13:54 23 Apr 18 11:33 26 Apr 18 11:39	AKF KCJ MCS RNV
Boron Fluoride	< 0.1 0.280 @	mg/L mg/L	0.020	EPA 300.0	30 Apr 18 12:45	

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was clevated for any analyte requiring a dilution as coded below:

e - Due to sample matrix

f = Due to sample quantity

l = Due to sample quantity

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WN/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 18 May 2018 Lab Number: 18-A18664 Work Order #: 31-0156 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Apr 2018 13:55 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH Sulfate Chloride Solids, Total Dissolved Calcium Boron Fluoride	7.41 * 7.2 51.6 @ 18.9 525 114.0 < 0.1 0.400 @	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.1	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	24 Apr 18 24 Apr 18 18 Apr 18 13:55 20 Apr 18 12:02 26 Apr 18 10:00 20 Apr 18 14:11 23 Apr 18 11:53 26 Apr 18 12:08 30 Apr 18 12:08	JMS JMS BMW DK AKF KCJ MCS RMV RMV

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current THI standards,
The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix
| 1 = Due to sample quantity | | 0 = Due to limit with the conformal standard response |
CERTIFICATION: NN LAB | 027-015-125 | WI LAB | 999447680 | NN MICRO | 1013-N | ND WW/DW | R-040



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 18 May 2018 Lab Number: 18-A18665 Work Order #: 31-0156 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 18 Apr 2018 14:35 Sampled By: MVTL FIELD PERSONNEL Date Received: 19 Apr 2018 13:20

PO #: 48679

Temp at Receipt: 0.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions pH, Field pH sulfate Chloride Solids, Total Dissolved Calcium	7.34 * 7.2 60.3 @ 15.3 492 108.0 < 0.1	units units mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0,500	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C	24 Apr 18 24 Apr 18 18 Apr 18 14:35 20 Apr 18 12:02 26 Apr 18 10:00 20 Apr 18 14:11 23 Apr 18 11:53 26 Apr 18 12:08 26 Apr 18 12:08	DK AKF KCJ MCS RMV
Boron Fluoride	0.250 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

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

= Due to concentration of other analytes

= Due to concentration of other analytes

= Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAH # 999447680 ND MICRO # 1013-M ND WW/FW # R-040



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INORGANIC & METALS ANALYSES: No problems were encountered with these analyses.

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Quality Control Report

Lab IDs: 18-A18659 to18-A18665	3665	Pro	Project: HOOT LAKE PLAN	OT LAK	E PLANT CCR	~	Work O	Work Order: 201831-0156	1831-015	99							
Analyte	u	LCS Rec %	LCS % Rec	Matrix Matrix Spike Spike Amt D		Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ I Dup I RPD I	MSD/ D/ Dup p RPD D Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	95 94	85-115 85-115	1.00	18A18651q 18A18657q 18A18663q	0.274 < 0.1 < 0.1	1.350 0.980 1.040	108 98 104	75-125 75-125 75-125	1.350 0.980 1.040	1.370 1.040 1.030	110 104 103	1.5 5.9 1.0	10 10 10	96 97 99	90-110 90-110 90-110	< 0.1
Calcium mg/L	50.00	97	85-115 50.0 85-115 50.0	50.0 50.0	18A18657q 18A18663q	42.20 131.0	88.40 177.0	92 92	75-125 75-125	88.40 177.0	91.80	99 82	3.8	10 10	101 103	90-110 90-110	< 0.5 < 0.5
Chloride mg/L				60.0 60.0 60.0 60.0	18-A18680 18-A18633 18-A18663 18-A18356	129 6.9 5.5 31.1	193 71.1 69.4 96.7	107 107 106 109	86-117 86-117 86-117 85-115	193 71.1 69.4 96.7	192 70.5 69.8 96.3	105 106 107 109	0.5 0.8 0.6 0.4	5555	102 105 102 102	90-110 90-110 90-110 90-110	3 3 3 3

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

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> > Quality Control Report

% Rec 90-110 Known Limits Dup Known
RPD Rec
Limit (<) (%) 106 MSD/ Dup Dup RPD MSD/ 10 10 Dup RPD 0.0 MSD Rec 88 88 87 Result 0.860 8.86 1.46 MSD/ Dup Result 0.860 8.76 1.59 Matrix | Matrix | MSD/ Dup Orig Work Order: 201831-0156 75-125 75-125 75-125 Spike % Rec Limits Spike Rec 80 86 100 % Matrix Spike Result 0.860 8.76 1.59 Spike Orig Result Matrix 0.700 0.110 0.590 Project: HOOT LAKE PLANT CCR 18-A19124 a18938qc a18659qc Matrix Spike A Matrix Spike 0.20 10.0 1.00 Amt LCS % Rec Limits LCS Rec % LCS Spike Amt Lab IDs: 18-A18659 to 18-A18665 Fluoride mg/L Analyte

< 0.02

Method Blank

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Quality Control Report Lab IDs: 18-A18659 to 18-A18665

Lab IDs: 18-A18659 to 18-A18665	8665	Pro	Project: HOOT LAKE PLANT	OT LAK	E PLANT CCR	ጽ	Work C	Work Order: 201831-0156	1831-01:	99							
Analyte	LCS Spilke Amt	LCS Rec %	LCS Matrix Matrix % Rec Spike Spike Limits Amt ID	Matrix Spike Amt	Matrix Spike D	Matrix Spike Orig Result	Matrix Spike Result	Matrix Matrix MSD/ Spike Spike Dup Rec %Rec Orig % Limits Result	Matrix Spike % Rec Limits	CHANGE AND	MSD/ Dup Result	MSD Rec %	MSD/ 1 Dup 1 RPD 1	MSD/ SD/ Dup F RPD F Emit (<) (Known kec %)	Known % Rec 1 Limits 1	Method Blank
pH units	ı	ı	ı,	I.	ı	ı,	0		I.	9.5	9.5	1	0.0	2.5	101	90-110	1
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	í	Ĺ	ı	ı,	ľ.	(1)	ı	T	0.49	7.2	7.1	ı		2.5		90-110	1
	1	1			1	ı	•		ı	8.4	8.4			2.5		90-110	
Solids, Total Dissolved mg/L	1		a	1	1	3	đ	ı	ı	323	318		1.6	10	96	85-115	< 10
90000	•	ı	ı	į.		ţ	E	ř	t	490	498	AIC.	1.6	10	93	85-115	< 10
	,	3	į	,	•			ï	i	553	563		1.8	7			
	D.	Ŀ	Ľ,	ı	C	Ţ	NIE.	ı	i	1680	1680	4	0.0	7			

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

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Page: 4 of 4

Quality Control Report

Lab IDs: 18-A18659 to 18-A18665

Project: HOOT LAKE PLANT CCR

MSD Rec 92 90 102 91 103 Dup Result MSD/ 515 45.2 593 45.6 60.6 Orig Result Matrix | Matrix | MSD/ 509 46.9 607 44.2 59.7 Dup Work Order: 201831-0156 68-132 68-132 68-132 68-132 68-132 % Rec Limits Spike Spike Rec 91 104 101 101 Matrix Result Spike 509 46.9 607 44.2 59.7 Matrix Spike Orig Result < 5 84.8 53.1 < 5 9.2 18-A18636 18-A18663 18-A18667 18-A18658 18-A18394 Matrix Spike ID Matrix Spike Amt 500 50.0 50.0 50.0 LCS % Rec Limits LCS Rec % LCS Spike Amt Sulfate mg/L

Analyte

Method Blank

Known % Rec Limits

Known Rec 8

MSD/ Dup RPD

Limit (<)

MSD/ Dup RPD

80-120 80-120 80-120 80-120

1.2 3.7 3.1 1.5

Approved by:

Minnesota Valley Testing Laboratories

1126 North Front Street New Phone: 800 782 3557 Fax:

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project Name:	me:	Offer Tail Power Co.	wer Co.	Project Type:	1	CCR		Nan	Name of Samplers:	nplers:	C	D. CALL	L	
		Hoot Lake Plant	ant				11				(V)	3		
Report To:	Otter Tail I	Report To: Otter Tail Power Company		Carbon Copy:	Copy:	Barr Engineering		Γ			>	St. O.T.	なわら	
Affn:	Paul Vukonich	nich		Affn:				Onc	Quote Number	er:				1
Address:	P.O. Box 496	961		Address:	;41			Wo	Work Order Number:	Vumber:				
Phone:	Fergus Falls, ⁿ 218-739-8349	Fergus Falls, MN 56038-0496 218-739-8349	96	-				La B	ab Numbers:	iál				
		Sample Information	nation						Bottle	Type			Analysis	71
	_		/	_	_	_				1	-	1 1 7		
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7	SZA	7 6 7	X APK	٠	G MS		1 -	9 -	9 2		~	A G	atched	_
٠	S3AR				GW		-	-	z	_				_
,	S51			1355	GW		-	-	z					1
	S52			1435 GW	GW		-	7	z	-				Т~~
1	S10R			1457	GW		~	~	z		_			т
	S13			1255 GW	GW		-	4-	z	770				T
ì	S14R		4	1405	GW		~	7	z		<u></u>			γ_
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Comments	Comments: CCR wells	S					1							Т

	ζ	200				,	c		
Samples Relinquished By:	3y. 1501	1 DON			Samples Received By: /	ived By: 14 - A	Copor		
Date: 17 HBr 18		Time: \$3>	520 Temp:	Temp: 7 7 784 Date: 19	Date: 19 Hpr 15		Time: 1390	Temp: 0.10	
Samples Relinquished i	nto:	Fridge (Log in Cart	Other:					
Samples Relinquished By	3y:				Samples Received By:	ived By:			
Date:		Time:	Temp:		Date:	Time:		Temp:	
Deliver	Samplers	Other:		is.	Seal Number(s) - If Used	s) - If Used		Per .	
Transpo.	Ambient	lce	Other:		Seals Intact?	Yes	No	900	1

; ⁴ ;	Groundwater Assessment			Site:	Otterta	all Powe	er Co./Hoot Lake
	Sampling Personnel:	ý.		Facility ID:	SW-2	11	
	Ben Volf			Date: 18	HDr 18		
		_		Unique Statio	on ID:		
		_		Sample ID:	S-2A		
	Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	-		Protective Po State ID Tag Grout Seal In	? Yes		No No
	Well Information						4070 770
	Well Depth: 79.61)		Well Casing		196.	1273,776
	Constructed Depth: 79.63	-		Static Water Previous Sta	i al	76	/
	Casing Diameter: 2" Water Level Before Purge: 74.	α α		×	After Sample:		Qq
	Water Level Before Purge: 74. Well Volume: 43	Gallons		Measuremen		Elec. \	- Y
	Sampling Information	Cultorio		***************************************		>	
	Weather Conditions: Temp:	43	Wind: 1	1015	Sky:	Clo	udy
(#	Sampling Method: Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
	Dedicated Equipment: (Yes) No	_		Pumping Ra	11		gpm . C
	Well Purged Dry? Yes (No)	_		Time Pump		149	am / pm
	Time Purged Dry?	_		Time of Sam	11 11	55	am / pm
	Duplicate Sample? Yes (No	ID:	<u> </u>	Sample EH:	-, 14.4		
	Sample Appearance; General:	Clear	Color: N	010 Phase	: NOTU	*****	Odor: NOT
	Specific Cond.	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
	Time pH Cond. 1451 7.31 1161	8.95	2.00	0.0	.50	1	
	1453 7.28 1162	8.93	1.96	0.0	1.00	2	
	1455 7.26 1162	8.90	1.71	0.0	1.50	3	
	1100 100 100	- V - I				4	
		-				5	
	Stabilized? (Yes) No		Amount Wa	iter Removed:	1.50		Gallons
	Comments:		-			200 M	

Groundwater Assessment			Site:	Otter	tail Powe	er Co./Hoot Lake
Sampling Personnel: Reg Wolf			Facility ID:	Apr 18	211	
			Unique Statio	on ID: 8148	30	
			Sample ID:	S-51		
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:)		Protective Postate ID Tag Grout Seal In	? (es))	No No
Well Information	1907					
Well Depth: 55.6	<u></u>		Well Casing		1221	1286,904
Constructed Depth: 55.60			Static Water		12360	.404
Casing Diameter: 2"			Previous Sta	tic: 237		
Water Level Before Purge: 50	000		Water Level	After Sample	: 50	.00
Well Volume: .9	Gallons	_	Measuremer	nt Method:	Elec.	WLP Steel Tape
Sampling Information Weather Conditions: Temp:	47	Wind: 1	1010	Sky:	clos	uly .
Sampling Method: Grundfos	Reladder SS/T	Disp. Baller	Whale	Grab Other:		
Dedicated Equipment: (es) N			Pumping Ra		The second	gpm
Well Purged Dry? Yes (V	2)_		Time Pump I		<u> 35</u>	am /(pm
Time Purged Dry?			Time of Sam		55	am / pm)
Duplicate Sample? Yes X			Sample EH:	1 (0	
Sample Appearance: General:	Clear	Color: MC	77 Phase	: hight	Sed.	Odor: Earthy
Time pH Specific	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1339 7.47 986	8.91	2.09	40.5	ŀ	1	
1343 7.42 1001		2.13	17.3	2	2	
1347 7.42 100	01	2.14	6.8	3	3	
1351 7.41 160	0 -0	2.21	47	4	4	
1355 7.41 100		2.23	2.8	5	5	
	1 5.00	and the second	ter Removed:	5	_1~	Gallons
Stabilized? (Yes No		Amount Ma	to Tomoved.	У		
Comments:						

Exceptions to Protocol:

國德	Groundwater Ass	essment			Site:	Ottert	ail Pow	er Co./Hoot Lake
	Sampling Personnel:				Facility ID:	SW-2	11	
	Bes	Wolf			Date: 18	Hp- 18		
			-		Unique Stati	on ID:		
			_		Sample ID:	S-52		
	Well Condition							
	Well Locked?	Yes No			Protective Po		·····	No
	Well Labeled?	Yes No	-		State ID Tag Grout Seal In			No No
	Casing Straight?	(Yes) No	-		Olout ocal ii	naoti (co)		
	Repairs Necessary: Well Information	- Millian						
	Well Depth:	88.30			Well Casing	Elevation:		1286.623
	Constructed Depth:	88.30	-		Static Water	1	215.	93
		2"			Previous Sta	1511		
	Casing Diameter:	-7	T _a a			After Sample:		.69
	Water Level Before Pu		<u> </u>			20 10 10 10	-	
	Well Volume:	2.67	Gallons		Measuremer	nt Methoa:	Elec.	WL) Steel Tape
	Sampling Informati	11	()		1010	01	c 1	1
±80	Weather Conditions:	Temp: 4	Lok		1010	Sky:	doc	udy
	Sampling Method:	Grundfos	Bladder SS/	Disp. Baller	Whale	Grab Other:		
8. ** * 5	Dedicated Equipment:	(Yes) No	_		Pumping Ra	1-	= 71	gpm
	Well Purged Dry?	Yes (No)			Time Pump	11.	59	am / 6m/
	Time Purged Dry?		_		Time of Sam		35	am / pm
	Duplicate Sample?	Yes (No)	ID:	=	Sample EH:	-45.7		
	Sample Appearance:	General:	Clear	Color: NC	ファレ Phase	: NOTE		Odor: Sulfur
			Temp	Color: NC	Turbidity	Gallons	SEQ	Odor: Suffur
	Sample Appearance: Time pH	General: Specific Cond.				Gallons Removed	SEQ #	Odor: Suffur Comments:
	Time pH	Specific Cond.	Temp	D, O,	Turbidity	Gallons		
	Time 12 pH 1411 7.35	Specific Cond.	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	#	
	Time 12 pH 1411 7.35	Specific Cond.	Temp °C 8.50 8.50	D. O. mg/L .56	Turbidity NTU 2.2	Gallons Removed	1	
	Time 12 pH 1411 7.35	Specific Cond.	Temp °C 8.50	D. O. mg/L	Turbidity NTU 2.2 O-O	Gallons Removed 3	# 1 2 3	
	Time 12 pH 1411 7.35	Specific Cond.	Temp °C 8.50 8.50	D. O. mg/L .56	Turbidity NTU 2.2 O-O	Gallons Removed 3	# 1 2 3 4	
	Time 12 pH 1411 7.35	Specific Cond.	Temp °C 8.50 8.50	D. O. mg/L .56 . 56 .55	Turbidity NTU 2.2 O-O	Gallons Removed 3	# 1 2 3	

Exceptions to Protocol:

Groundwater Assessment			Site:	Otterta	il Powe	er Co./Hoot Lake
Sampling Personnel:			Facility ID:	SW-2	11	
Ben Sirbhs			Date: 18 A	DE 18		
			Unique Static		2	
			Sample ID:	S-14R		
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		3.5	Protective Po State ID Tag Grout Seal In	? <u>(Yeş</u>		No No
Well information						
Well Depth: 87.11			Well Casing	Elevation:		1280.61
Constructed Depth: 70.86			Static Water	Elevation:	201-	06
Casing Diameter: 2"			Previous Sta	tic: 1201	136	
Water Level Before Purge: 79.55			Water Level	After Sample:	79	.73
	Gallons	_	Measuremen	t Method:	Elec.	NILI Steel Tap
Sampling Information		<u>, (d</u>				
Weather Conditions: Temp: 낙도	5	Wind: NE	3 - 11	Sky:	50	nny
odinping	Hadder S6/T	Disp, Bailer	Whale	Grab Other:		
Dedicated Equipment: Yes No			Pumping Rat			gpm
Well Purged Dry? Yes (1)			Time Pump I			am /(pm)
Time Purged Dry?	منسب		Time of Sam	4	<u></u>	am (ph)
Duplicate Sample? Yes No	D; ——		Sample EH:	2.7		
Sample Appearance: General: 🖒	24.1	Color: Nov	∖ Phase	: It stall	ment	Odor: 51+ 50
	remp	D. O.	Turbidity NTU	Gallons Removed	SEQ #	Comments:
Time pri	9.23	mg/L	 	1. 25°	1	COMMONG
010		5.77	66.3		1	
1350 7.73 941	4.01	4.97	31.0	2.50	2	
1355 7.65 939	9.01	2.83	32.4	3.75	3	
14,00 7-62 935	9.03	2.03	23.1	5.8	4	
1405 7.53 935	9.03	2.51	5.7	6-25	5	
Stabilized? Yes (No)		Amount Wal	er Removed:	6.25		Gallons
Comments:			000000			

Groundwater Assessment			Site:	Otterta	ail Powe	er Co./Hoot Lake
Sampling Personnel:			Facility ID:	SW-2	11	
Ben Stubbas	500		Date: 13	81 19A		
-	5 0.		Unique Stati	ň	0	
			Sample ID:	S-13		
Well Condition Well Locked? . Yes No Well Labeled? Yes No Casing Straight? Yes No Repairs Necessary:			Protective Postate ID Tag Grout Seal I	1? (रेक्डिड		No No No
Well Information						
Well Depth: 90.27			Well Casing			1296.423
Constructed Depth: 90.19			Static Water		210.	41
Casing Diameter: 2"	•			atic: 1210.		
Water Level Before Purge: 36.01			Water Level	After Sample:		ET 8C.11
Well Volume: 0-69	Gallons	-	Measuremen	nt Method:	Blec.	NJLI Steel Tape
Sampling Information				Olan		,
Weather Conditions: Temp: 44			16-10	Sky: Grab Other:	Fril	<u> </u>
Sampling Method: Grundfos Dedicated Equipment: Yes No	Bladder SSVT	Disp. Bailer	Whale Pumping Ra			gpm
Dedicated Equipment: (Yes' No Well Purged Dry? Yes (No				Began: 124	· (-	am /(ph)
Time Purged Dry?	•			npling: 175		am /(pm)
Duplicate Sample? Yes (No)	ID;	•	Sample EH:			
Sample Appearance: General: C		Color: No	nc Phase	e: Nevec.		Odor: MAR
Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1249 7.51 827	9.19	1.95	0	0.75	1	
	9.19	1.78	0	1,50	2	
1252 7 51 832						
1252 7.51 832 1255 7.45 834		1.50	0	2.25	3	7/ 7/4-2-2
1252 7.51 832 1255 7.45 834	9.20	1.50	0	7.25	3	
		1.50	0	2.25		
1255 7.45 834			ter Removed:		4	Gallons

: Exceptions to Protocol:

Groundwater Assessment			Site:	Ottert	ail Powe	er Co./Hoot Lake
Sampling Personnel:			Facility ID:	SW-2	11	
Ben Shibbs			Date: 18	Apr 18		
			Unique Stati		11	
			Sample ID:	S-10F	₹	
Well Condition Well Locked? Well Labeled? Casing Straight? Well Labeled? Wes No			Protective Postate ID Tag Grout Seal II	? X		No No No
Repairs Necessary: Well Information	Company of the party of the territory					
Well Depth: 86-62			Well Casing	Elevation:		1281.47
Constructed Depth: 57.00			Static Water	Elevation:	120	9-15
Casing Diameter: 2"			Previous Sta	itic: 1209	.27	
Water Level Before Purge: 72_3			Water Level	After Sample:	72	-32
Well Volume: 1.35	Gallons	_	Measureme		Elec.	`
Sampling Information	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		· · · · · · · · · · · · · · · · · · ·			
Weather Conditions: Temp: 나	5	Wind: کے	-1	Sky:	fail	
Sampling Method: Grundfos	Madder &S/T	Disp. Baller	Whale	Grab Other:		
Dedicated Equipment: Yes No			Pumping Ra			gpm
Well Purged Dry? Yes 💋 🌣	₂ 2		Time Pump		<i>3</i> 3	am / pm
Time Purged Dry?	St. 1814 Lys	icate	Time of San		57	am / øm)
Duplicate Sample? Yes	ID:	igat -	Sample EH:	[9.3		
Sample Appearance: General:	Clear	Color: 1/2	A.R. Phase	e: None		Odor: Mone
Specific Cond.	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1436 7.26 876	9.02	2.05	17-3	1.50	1	
1445 7.24 874	8.00	1.51	6.9	3.0	2	
1451 7.23 875	9.00	1.26	3.1	4.5	3	
1457 7.21 875	8.98	1.12	0.5	6.0	4	
1437 7.21 37	J. (J				5	
Stabilized? Yes No		Amount Wa	ter Removed:	6.0		Gallons
Comments:					356 10	

Exceptions to Protocol:

Groundwater Assessment		Site:	Otterta	ail Powe	Co./Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	11	
Ben Stubbs		Date: 18 A	P, 18		
		Unique Station	n ID: 67467	1	
		Sample ID:	S-3A-I	R	
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		Protective Pos State ID Tag? Grout Seal Int	(Ye's	<	No No No
Well Information					
Well Depth: 78.40	3	Well Casing E			1271.562
Constructed Depth: 78.42		Static Water E		203	.08
Casing Diameter: 2"		Previous Stati	c: 1203.		
Water Level Before Purge: 63.56		Water Level A	After Sample:	44	West of the second seco
Well Volume: 1.60 Gallons		Measurement	Method:	€lec. ÿ	別」 Steel Tape
Sampling Information		a	250	MACU.	
Weather Conditions: Temp: 나о	Wind: NE	- 9		W Pag	choudy
Sampling Method: Grundfos Bladder S	S/T Disp. Bailer		Grab Other:		
Dedicated Equipment: As No		Pumping Rate			gpm
Well Purged Dry? Yes (1)		Time Pump B			(any / pm
Time Purged Dry?		Time of Samp			am / ტუ
Duplicate Sample? Yes (No ID:		Sample EH:	91.7	8	

Sample Appearance: General: Cler	Color: NO P	8	hore		Odor: None
	D. O. mg/L	Turbidity NTU	トゥイミ Gallons Removed	SEQ #	Odor: None
Sample Appearance: General: Clerconstance: Specific Temp	D. O. mg/L	Turbidity	いった Gallons Removed 1・75	SEQ	
Sample Appearance: General: CICY Specific Temp Cond. CC 1137 7.79 875 8.87	D. O. mg/L 1. 45	Turbidity NTU	Removed 1.75 3.56	SEQ #	
Sample Appearance: General: E lex Time pH Specific Cond. Temp oc 1137 7.79 875 8.87 1144 7.55 875 8.83	D. O. mg/L	Turbidity NTU	Gallons Removed 1.75 3.56 5.25	SEQ #	
Sample Appearance: General: 6 6 7 Time pH Specific Cond. Temp oc 1137 7.79 875 8.87 1144 7.55 875 8.83 1151 7.43 881 8.81	D. O. mg/L 1. 95 2.38 1.98	Turbidity NTU 3.8 6-5	Gallone Removed 1.75 3.56 5.25 7.00	SEQ # 1	
Sample Appearance: General: 6 Time pH Specific Cond. Temp oc 1137 7.79 875 8.87 1144 7.55 875 8.83 1151 7.43 231 8.81	D. O. mg/L 1. 45 2. 38 1. 48 2. 1. 84	Turbidity NTU 3.8 6.5	Gallons Removed 1.75 3.56 5.25	SEQ # 1 2 3	

Comments:

Exceptions to Protocol:

Hollen, Josh

From:

Tim Portner <tportner@mvtl.com>

Sent:

Monday, December 31, 2018 8:47 AM

To:

Hollen, Josh

Subject:

RE: Hoot Lake

This is an EXTERNAL email. DO NOT open attachments or click links in suspicious email.

Good morning Josh

Regular state samples are filtered and CCR samples are not filtered per your email February 13 2018.

Any other questions let me know

Thanks and Happy New Year

Tim Portner

Field Service Manager | Minnesota Valley Testing Laboratories, Inc. 1126 North Front Street | New Ulm, MN 56073 | Mobile 507-276-8089 | mvtl.com





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



Page: 1 of 3

FINAL REPORT COMPLETION DATE: 24JW 1898

Date Reported: 5 Jul 2018

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0276 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Chemistry Lab Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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



AMENDED REPORT-REMOVED FIELD PH - CCR

PAUL VUKONICH- -----OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S2A

Page: 2 of 3

Report Date: 5 Jul 2018 Lab Number: 18-A30167 Work Order #: 31-0276 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Jun 2018 12:25 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Jun 2018 16:41

PO #: 48679

Temp at Receipt: 0.0C

Method Method Date As Received Reference Analyzed Analyst RLResult 29 Jun 18 12:15 RMV 0.020 EPA 300.0 0.210 Fluoride mg/L

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

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

Q = Due to sample matrix
| = Due to sample quantity
| = Due to sample quantity
| = Due to sample quantity
| = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 WD MICRO # 1013-M ND WW/DW # R-040



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



3 of 3 Page:

CERTIFICATE of ANALYSIS - CCR

PAUL .VUKONICH OTTER TAIL POWER CO PO BOX 496

MN 56538-0496 FERGUS FALLS

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 5 Jul 2018 Lab Number: 18-A30168 Work Order #: 31-0276 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Jun 2018 12:48 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Jun 2018 16:41

PO #: 48679

Temp at Receipt: 0.0C

Method Date As Received Method RL Reference Analyzed Analyst Result 1.00 I-1586-85 18 Jun 18 12:48 BMW 7.03 units pH, Field

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
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: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

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

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Quality Control Report

Page: 1 of 1

Lab ID: 18-A30167

Project: HOOT LAKE PLANT

Work Order: 201831-0276

	Method Blank	< 0.02
	Known % Rec Limits	90-110
	Known Rec (%)	66
	MSD/ Dup RPD Limit (<)	10
	MSD/ Dup RPD	6.0
	MSD Rec %	104
	MSD/ Dup Result	1.16
0	MSD/ Dup Orig Result	1.17
2010010010010010	Matrix Spike % Rec Limits	75-125
1000	Matrix Spike Rec %	105
O TY TO	Matrix Spike Result	1.17
	Matrix Spike Orig Result	0.120
T	Matrix Spike D	a31282qc
	Matrix Spike Amt	1.00
	LCS % Rec Limits	
	LCS Rec. %	
	CS] Spike]	
	nalyte	luoride mg/L
l	<	щ

Approved by:

Minnesota Valley Testing Laboratories New Ulm, MN 56003 Fax: 507 359 2890

1126 North Front Street Phone: 800 782 3557

Field Service Chain of Custody Record

This is an exact copy of the original document By Class

Project Name:		ower Co.	Project Type:	CCR		Name of Sam	Name of Samplers: Per 11/1/16	JAIK	
	Hoot Lake Plant	ant)<	- 1	
or 10:	Otter I ail Power Company		Carbon Copy:	Barr Engineering	guir	24	といいり	いくてなる	_
	Paul Vukonich		Attn:			Quote Number:	· · ·		
Address: P.C.	P.O. Box 496		Address:			Work Order N	Work Order Number: 01-04-10	2.2	
	Fergus Falls, MN 56038-0496	496				Lab Numbers:			
rione.	9400-807-0								
	Sample Information	mation				Bottle	Type	Analysis	ŭ.
		_	_	ed/			\$0\$ZH	\$COST	
amny qe7	Oldrings	ejeO	emiT T elqmeS	Sample noises	000 HAO3	100 HINO3	POSSHOOF POSSHO	or services of ser	
49		187500-18	1235	-	-		7	1 品	T
68 S14R	4R	<u> </u>	1748 GW		¥			於	Т
			GW						Г
			GW	-					Γ-
			GW						Γ-
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			GW	7					Ι
		-							
Comments: CCR wells	R wells *SIJR	1, 5	ald Du	lile					7
	A 224	5.	Flowide cont	7.50					
Samples Relinquished Bv.		100			Samples R	Samples Received By:	The Mindin		Г
Date: 18 トッパ	250 R	Time: 104		Temp: 0,07M785	Date: / }	Jun 18	Time: // 4	Temp: 0 or	7
Samples Relinquished into:	ruished into:	Fridge	Log in Cart	Other:				5	Т
Samples Relinquished By:	uished By:				Samples R	Samples Received By:			
Date:		Time:	Temp:	:dı	Date:		Time:	Temp:	T
Deliven	Samplers	Other:		21	Seal Number(s)	er(s) - If Used		er	Г
Transport	Ambient		Other.	j.	Seals Intact?	t? Yes	s No		

Tim Portner

Subject:

FW: Summer monitoring at Hoot Lake

From: Hollen, Josh [mailto:jhollen@otpco.com]
Sent: Wednesday, May 30, 2018 10:01 AM
To: Tim Portner <tportner@mvtl.com>
Cc: Vukonich, Paul <pvukonich@otpco.com>
Subject: RE: Summer monitoring at Hoot Lake

Tim,

That will work. It is 2 wells that need to be resampled for the CCR. Treat it as a normal sampling event for the two wells, so GW level, purge and stabilization, good field notes, all the other stuff, you know the routine. Remember it's CCR so no field filtering.

The two wells we need to have resampled are monitoring well S-2A for fluoride, and monitoring well S-14R for pH. We will want a rush analysis for these two wells on the chain of custody.

Let me know if you have any questions.

Josh Hollen Environmental Compliance Specialist Otter Tail Power Company (218) 739-8314 500 Now for each

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwater Ass	essment			Site:	Otter	ail Pow	ver Co./F	loot Lake
Sampling Personnel:				Facility ID:	SW-2	11	to	_
Ben	WOH	_		Date: 18	Jun 18			
Dusty	Furusyn	== 		Unique Stat	ion ID:			
1		_		Sample ID:	S-2A			
Well Condition								
Well Locked?	(Yes) No	-		Protective F			No	.)
Well Labeled?	Yes No	-		State ID Ta			(NO)	0
Casing Straight?	(es) No			Grout Seal	Intact? (Yes		No	D'
Repairs Necessary:								
Well Information	-01							
Well Depth:	79.61			Well Casing			1273.7	776
Constructed Depth:	79.63			Static Wate	r Elevation: /	197.	49	(4-0)(1)
Casing Diameter:	2"	=		Previous St	atic: //9/o.	79		
Water Level Before Pu		28_		Water Leve	l After Sample:	76	<u>3</u> €	
Well Volume:	154	Gallons	_	Measureme	nt Method:	Elec.	W)	Steel Tape
Sampling Informati		/						
Weather Conditions:	Temp: 7	16	Wind: SE	25	Sky:	cle	u/	
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:			
Dedicated Equipment:	(res) No	_		Pumping Ra	ate: . 25		gpm	
Well Purged Dry?	Yes (No)			Time Pump	Began: /2/0	0		am / 6m
Time Purged Dry?				Time of Sar	npling: 122	5		am / pm
Duplicate Sample?	Yes (No)	ID:		Sample EH:	175.2			
Sample Appearance:	General: (Seur	Color: 1/C	ウィン Phas	e: 1/67~		Odor:	NUTU
	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	T	
Time pH	Cond.	°c '	mg/L	NTU	Removed	#	Comm	ents:
1219 6.84	1119	10.68	2.27	0.0	.75	1		
1222 6.83	1120	10.42	2.00	0.0	1-50	2		
1225 6.83	1120	10.25	197	0.0	2.25	3		
						4		
						5		
Stabilized? Xes	No	J.,,	Amount \Mat	er Removed:	2,25	.L <u>~</u>	Gallon	S
Comments:	110		/ intodite / Val	or romovou.	2,4-3		Odilon	
COMMENTS.								

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwater Ass	essment			Site:	Otter	ail Power C	o./Hoot Lake
Sampling Personnel:				Facility ID:	SW-2	!11	
	Wolf	*		Date: 8 :	June 18		
Dusty I	wolf	_		Unique Stati	on ID: 80634	42	
	•	-		Sample ID:	S-14F	₹	
Well Condition	♠						
Well Locked?	(Yes/ No	=		Protective Po		No	
Well Labeled? Casing Straight?	Yes No	-		State ID Tag Grout Seal In		No No	
Repairs Necessary:	140 140	-		Ordat oddrii	naot: (Og		
Well Information							
Well Depth:	87.11	_		Well Casing	Elevation:	12	80.61
Constructed Depth:	70.86	_		Static Water	Elevation: /	201.24	
Casing Diameter:	2"	-		Previous Sta	tic: /201.0	JG	
Water Level Before Pu	rge: 79.3°	7		Water Level	After Sample:	=-~	
Well Volume:	, 25	Gallons	_	Measuremer	nt Method:	Elec. WLI) Steel Tape
Sampling Informati	on						
Weather Conditions:	Temp: /	10	Wind: S	05	Sky:	Clear	
Sampling Method:	Grundfos	Bladder SS/7	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment:	(Yes No			Pumping Ra	te: , 25	gp	m
Well Purged Dry?	Yes No	<u>~</u>		Time Pump I	Began: 123	33	am / (km)
Time Purged Dry?	-	_		Time of Sam	pling: 1248	3	am /(pm)
Duplicate Sample?	Yes No	ID:	-	Sample EH:	-76.1		
Sample Appearance:	General: (Clear	Color: N/C	フル Phase	: NO1V	Oc	lor: NON
	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH	Cond.	°C	mg/L	NTU	Removed	# Cc	mments:
1238 7.08	1095	10.21	1.11	0.0	1.25	1	
1243 7.04	1076	10.32	,87	0.0	2.50	2	
1248 7.03	1070	10,20	.77	0.0	3.75	3	
1210 1.03	10 10	10,20	4//		3.70		
			-			5	
Stabilized? (es)	No		Amount Ma	ter Removed:	3.75	- Anna Anna Anna Anna Anna Anna Anna Ann	allons
Comments:	NU		Airioditt vva	ici ixcinoved.	J. \	- 08	AII OI IO
Comments.	Δ-				. 19		
	72	F. 210C	reading	15 Only	<i>t</i>		

Exceptions to Protocol:





Page:

1 of 8

FINAL REPORT COMPLETION DATE:

9 NOV 18 A.S.

Date Reported: 7 Nov 2018

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Work Order #: 31-0497 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

0810018

Chemistry Lab Manager/Date Reviewed

for 57NW2086 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined





CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Page: 2 of 8

Report Date: 7 Nov 2018 Lab Number: 18-A56753 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 12:44 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.04	units	1.00	I-1586-85	15 Oct 18 12:30	DGF
	* 7.0	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
pH Sulfate	153	mg/L	5.0	ASTM D516-07	25 Oct 18 9:22	AKF
Chloride	3.0	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	627	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	142.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
	0.116	mg/L	0.100	SW6010C	24 Oct 18 16:11	KAM
Boron Fluoride	0.200	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

^{*} Holding Time Exceeded





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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-3AR

Report Date: 7 Nov 2018 Lab Number: 18-A56754 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 15 Oct 2018 12:09 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions pH, Field pH Sulfate Chloride Solids, Total Dissolved Calcium Boron Fluoride	6.85 * 7.1 129 13.5 559 115.0 0.123 0.160	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.100	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	22 Oct 18 15 Oct 18 12:09 17 Oct 18 14:12 25 Oct 18 9:22 18 Oct 18 11:08 18 Oct 18 12:00 24 Oct 18 16:11 24 Oct 18 16:11 20 Oct 18 4:20	JMS MS DK AKF KCJ NB KAM KAM RMV

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

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

Due to sample matrix
| = Due to sample quantity
| = Due to internal standard response
| ND MICRO # 1013-M ND WW/DW # R-040





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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 7 Nov 2018 Lab Number: 18-A56755 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 15 Oct 2018 12:44 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions pH, Field pH Sulfate Chloride Solids, Total Dissolved Calcium Boron Fluoride	6.82 * 7.1 116 12.6 566 116.0 < 0.1 0.160	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.1	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	22 Oct 18 15 Oct 18 12:44 17 Oct 18 14:12 25 Oct 18 9:41 18 Oct 18 11:08 18 Oct 18 16:11 24 Oct 18 16:11 20 Oct 18 4:20	JMS MS DK AKF KCJ NB KAM KAM

^{*} Holding Time Exceeded





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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 7 Nov 2018 Lab Number: 18-A56756 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 15 Oct 2018 13:59 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions pH, Field pH Sulfate Chloride Solids, Total Dissolved Calcium Boron	7.03 * 7.2 85.8 8.6 501 115.0 < 0.1	units units mg/L mg/L mg/L mg/L mg/L mg/L	1.00 1.0 5.0 3.0 10 0.500 0.1	I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E SM 2540 C-97 SW6010C SW6010C EPA 300.0	22 Oct 18 15 Oct 18 13:59 17 Oct 18 14:12 25 Oct 18 9:41 18 Oct 18 11:08 18 Oct 18 12:00 24 Oct 18 16:11 24 Oct 18 16:11 20 Oct 18 4:20	JMS MS DK AKF KCJ NB KAM KAM RMV

* Holding Time Exceeded





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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 7 Nov 2018 Lab Number: 18-A56757 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 15 Oct 2018 13:24 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	6.83	units	1.00	I-1586-85	15 Oct 18 13:24	MS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	123	mq/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	5.7	mq/L	3.0	SM 4500 C1 E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	600	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	133.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.190	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
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: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040





Page: 7 of 8

CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 7 Nov 2018 Lab Number: 18-A56758 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 15 Oct 2018 14:58 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.23	units	1.00	I-1586-85	15 Oct 18 14:58	DGF
pН	* 7.0	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	63.3	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	19.2	mg/L	3.0	SM 4500 C1 E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	507	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	112.0	mq/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.220	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

^{*} Holding Time Exceeded

RL = Reporting Limit RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

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: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WM/DW # R-040





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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 7 Nov 2018 Lab Number: 18-A56759 Work Order #: 31-0497 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 15 Oct 2018 15:43 Sampled By: MVTL FIELD PERSONNEL Date Received: 16 Oct 2018 13:24

PO #: 48679

Temp at Receipt: 0.9C

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.18	units	1.00	I-1586-85	15 Oct 18 15:43	DGF
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate .	57.1	mq/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	17.0	mg/L	3.0	SM 4500 C1 E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	464	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	105.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.330	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

^{*} Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix
| = Due to sample quantity
| = Due to sample quantity
| = Due to internal standard response
| = Due to sample quantity | = Due to internal standard response | ND MICRO # 1013-M | ND WW/DW # R-040

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER

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www.mvtl.com

Page: 1 of 1

Quality Control Report

Lab IDs: 18-A56753 to 18-A56759

Project: HOOT LAKE PLANT

Work Order: 201831-0497

The state of the s	The second second second							2000	100000000000000000000000000000000000000	-							
Analyte	LCS Spike Amt	LCS Rec %	LCS Matrix %Rec Spike Limits Amt	LCS Matrix Matrix % Rec. Spike Spike Imits Amt ID	Matrix Spike D	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	. .	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec	Known % Rec	Method
Boron mg/L	1.000	86	85-115 1.00	1.00	18-A56759	< 0.1	1.030	103	75-125	_		S S S S S S S S S S S S S S S S S S S		3		-	< D 1
Calcium mg/L	50.00	103	85-115 50.0	50.0	18-A56759	105.0	160.0	110	75-125	160.0	156.0	102	+	2 2	104	90-110	4.0
Chloride mg/L	1	1	t	0.09	18-A56856	6.1	68.5	104	86-117	68.5	66.5	101	+	2 5	106	00-110	3 7
Fluoride mg/L	0.200	110	85-115 0.20		18-A56756	0.220	0.380	08	75-125	0.380	0.410	95	16	2	201	201100	
pH units	1	1										3	+	2	t or	20-110	> 0.02
			10				1		,	7.8	8.2		0.0	2.5	101	90-110	
Solids, Total Dissolved mg/L	1	1	ı	ı		1	3	,	•	254	251	1	1.2	10	104	85-115	× 10
	1	1	1	1	1	1		E	ï	3270	3300	,	6.0	_			2
Sulfate mg/L	į	,	1	50.0	18-A56751	< 5	45.4		68-132		43.5	87	4 3	~	0.7	80.120	1
	1	ţ	ij.	20.0	18-A56755	116	169	106	68-132	169	164	96	3.0	2	6	80-120	2 4
													-	Control of the contro		2)

ved by:

Approved by:





Page:

1 of 2

FINAL REPORT COMPLETION DATE: 18 Ox (180%

Date Reported: 13 Dec 2018

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0596 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Ckemistry Lab Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined





2 of 2 Page:

CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 13 Dec 2018 Lab Number: 18-A67395 Work Order #: 31-0596 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 29 Nov 2018 11:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 29 Nov 2018 14:55

PO #: 48679

Temp at Receipt: 1.3C

	As Recei	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH, Field	6.94	units	1.00	SM4500-H+-2011	29 Nov 18 11:19	BMW
Solids, Total Dissolved	443	mg/L	10	SM 2540 C-97	4 Dec 18 10:46	AL

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

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Page: 1 of 1

Quality Control Report Lab D: 18-A67395

	Method Blank	< 10	
	Known % Rec Limits	85-115	
	Known Rec (%)	104	
	MSD/ Dup RPD Limit (<)	10	10
	MSD/ Dup RPD	2.6	3.3
	MSD Rec %	ı	ï
	MSD/ Dup Result	308	120
9	MSD/ Dup Orig Result	300	124
Work Order: 201831-0596	Matrix Spike % Rec Limits	ı	ı
-der: 201	Matrix Spike Rec %	ı	
Nork Or	Matrix Spike Result	,	1
	Matrix Spike 1 Orig 8 Result 1		
IN	Z 0 0 H		
E PLA	Matrix Spike D	ŗ	ı
OT LAK	Matrix Spike Amt	ı	1
roject: HOOT LAKE PLAI	LCS % Rec Limits	ı	į
Pro	LCS Rec %	1	3
	LCS Spike Amt	1	1
Lab ID: 18-A67395	analyte	Solids, Total Dissolved mg/L	
_	William Strategy	MODE	

Approved by:

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

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Lab Numbers:	103 Number H2504 Nor N N Nor N N Nor N N N N	Bottle Type 500 NaO3 Filler? Y or N 500 HNO3 Filler? Y or N 500 HNO3 Filler? Y or N 500 HNO3	## ## ## ## ## ## ## ## ## ## ## ## ##	Bottle Dob D	Bottle Type 1000 HNO3	Bottle Type Bottle Type Bottle Type Bottle Type Bottle Type Bottle Type Boo HNO3 Filler? Y or N 500 HNO3 Fille	Bottle Type Bottl	Bottle Type 1000 HNO3 1000 HNO3 1000 HNO3 1000 HNO3 1000 HNO3 1000 HNO3 1000 HNO3	Bottle Type Bottle Type Bottle Type Bottle Type Bottle Type Book HVO3 FILIBET? Y OF N BOOK HVO3 FILIBET? Y	BOOKHOO3 \$\text{POOP} \text{POOP} P	Bottle Type Bottle Type Bottle Type Bottle Type Bottle Type Book HVO3 B	A TOSOSHOOG TOSO	Bottle Type Manual Content Manual C	Bottle Type Bottle Type Bottle Type Moo Amber P2SO4 Moo	Bottle Type Bottle Type MoeNood 1000 HNOOS MOEN HOOS Anniber H2SO4 MOEN OOB MOEN	By:
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Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

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Groundwater Assessment	Site: Otter Tail Power Co./ Hoot Lake
Sampling Personnel:	Facility ID: SW-211
Mart Steam	Date: 24 NOV18
Box WOIF	Unique Station ID: 806341
AND	Sample ID: S-10R
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Protective Posts? (Yes No State ID Tag? (Yes No Grout Seal Intact? (Yes No
Well Information	
Well Depth: 80.62	Well Casing Elevation: 1281.47
Constructed Depth: 57.00	Static Water Elevation: 1つ0分・6 >
Casing Diameter: 2"	Previous Static: 1209.15
Water Level Before Purge: 79,80	Water Level After Sample: 73.82
Well Volume: 1. J 7 Gallons	Measurement Method: Elec. WD Steel Tape
Sampling Information	15
Weather Conditions: Temp: 27 Wind: 5	
	Ses Sky: Cloudy/tos
Sampling Method: Grundfos Gladder SSD Disp. Baller	Whale Grab Other:
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No	Whale Grab Other: Pumping Rate: 0,35 gpm
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Yes No	Whale Grab Other: Pumping Rate: 0,25 gpm Time Pump Began: 1101 am / pm
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry?	Whale Grab Other: Pumping Rate: 0, 25 gpm Time Pump Began: 110 am / pm Time of Sampling: 1119 am / pm
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID:	Whale Grab Other: Pumping Rate: 7,25 gpm Time Pump Began: 110 am / pm Time of Sampling: 1119 am / pm Sample EH: 11.6
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes (16) ID:	Whale Grab Other: Pumping Rate: 0, 2 gpm Time Pump Began: 110 am / pm Time of Sampling: 1114 am / pm
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Col	Whale Grab Other: Pumping Rate: 7,2 gpm Time Pump Began: 110 am / pm Time of Sampling: 1119 am / pm Sample EH: 11. S Turbidity Gallons SEQ
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Color: Cond. Specific Temp D. O. mg/L	Whale Grab Other: Pumping Rate: 7,25 gpm Time Pump Began: 110 am/pm Time of Sampling: 1114 am/pm Sample EH: 11,6 Turbidity Gallons SEQ Removed # Comments:
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Color: Cond. Specific Temp D. O. mg/L Time pH Cond. Cond	Whale Grab Other: Pumping Rate: O, J S gpm Time Pump Began: 1101 am / pm Time of Sampling: 1114 an / pm Sample EH: 11. S Turbidity Gallons SEQ Removed # Comments: Q, 7 1, 50 1
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Clear Color:	Whale Grab Other: Pumping Rate: O, J S gpm Time Pump Began: 1101 am / pm Time of Sampling: 1114 an / pm Sample EH: 11. S Turbidity Gallons SEQ Removed # Comments: Q, 7 1, 50 1
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Color: Cond. Time pH Cond. 1107 6.96 888 3.63 2.13 1113 6.95 887 8.63 2.13	Whale Grab Other: Pumping Rate: O, J S gpm Time Pump Began: 1101 am / pm Time of Sampling: 1114 an / pm Sample EH: 11. S Turbidity Gallons SEQ Removed # Comments: Q, 7 1, 50 1
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Color: Cond. Time pH Cond. 1107 6.96 888 8.63 2.13 1113 6.95 887 8.63 2.13	Whale Grab Other: Pumping Rate: 7, 3 gpm Time Pump Began: 1101 am/ pm Time of Sampling: 1119 am/ pm Sample EH: 11. 5 Turbidity Gallons SEQ NTU Removed # Comments: 4,7 1,50 1 9,7 3.0 2
Sampling Method: Grundfos Gladder SSD Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes 16 ID: Sample Appearance: General: Clear Color: Color: Cond. Time pH Cond. 1107 6.96 888 3.63 2.13 1113 6.95 887 8.63 2.13	Whale Grab Other: Pumping Rate: 0,35 gpm Time Pump Began: 1101 am/ pm Time of Sampling: 1119 am/ pm Sample EH: 11. b Turbidity Gallons SEQ Removed # Comments: 9,7 1,50 1 9,7 3.0 2 9,1 4,5 3
Sampling Method: Grundfos Gladder SST Disp. Baller Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Clear Color:	Whale Grab Other: Pumping Rate: 0, 3 gpm Time Pump Began: 110 am/ pm Time of Sampling: 1119 am/ pm Sample EH: 11. b Turbidity Gallons SEQ Removed # Comments: 9,7 1,50 1 9,7 3.0 2 9,1 4.1 4

Exceptions to Protocol: