



# **2022 Annual Groundwater Monitoring and Corrective Action Report**

***Ash Landfill***

***Hoot Lake Plant***

***Fergus Falls, Minnesota***

Prepared for  
Otter Tail Power Company

January 2023

2022 Annual Groundwater Monitoring and Corrective Action Report

Ash Landfill

Hoot Lake Plant  
Fergus Falls, Minnesota

January 2023

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## Abbreviations

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



## Executive Summary

This summary provides an overview of the Groundwater Monitoring & Corrective Action Program status as required by 40 CFR 257.90(e)(6). The CCR unit operated under the detection monitoring program described in §257.94 at the start of the 2022 annual reporting period. The monitoring program identified statistically significant increases (SSIs) over background for calcium, sulfate, and total dissolved solids at monitoring well S-3A-R during the spring 2022 detection monitoring event. On November 3, 2022, the CCR unit transitioned to an assessment monitoring program, as required by §257.94(e). At the end of the 2022 annual reporting period, the CCR unit was operating under the assessment monitoring program as described in §257.95. Corrective actions have not been implemented.

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# 1 Introduction

Otter Tail Power Company (OTP) operated the Hoot Lake Generating Plant (Hoot Lake), located in Fergus Falls, Minnesota. Hoot Lake was a coal-fired electrical generating plant, the operation of which resulted in coal combustion residuals (CCR) as a by-product. Hoot Lake stopped burning coal on May 27, 2021. Management of CCR from plant operations included placing CCR 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 location of the Ash Landfill is shown on Figure 1.

This 2022 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Ash Landfill at Hoot Lake. The Ash Landfill is currently in assessment monitoring, as described by §257.95 of the CCR Rule.

## 1.1 Purpose

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

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

## 1.2 Status of the Groundwater Monitoring and Corrective Action Program

Baseline monitoring was completed in 2017, as documented in the 2017 Annual Groundwater Monitoring and Corrective Action Report, Ash Disposal Area (Barr, 2018). Evaluation of groundwater monitoring data for SSIs over background levels for the constituents listed in appendix III to the CCR Rule, began on October 17, 2017, and continued until November 2, 2022. Statistically significant increases (SSIs) over background were determined for the spring 2022 monitoring event for calcium, sulfate, and total dissolved solids at monitoring well S-3A-R. As a result, the CCR unit transitioned to assessment monitoring on November 2, 2022 (Section 2.3). At the end of 2022, the assessment monitoring program was ongoing. Corrective actions have not been implemented.

## 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	Not applicable – no wells were installed or decommissioned
§257.90(e)(3)	All monitoring data obtained under §257.90 through §257.98; provide the number and date groundwater samples were collected, and the monitoring (i.e., detection or assessment)	Section 2.2 Monitoring and Analytical Results; Table 3, Figure 2, Figure 3, Figure 4, Appendices
§257.90(e)(4)	Discuss any transition between monitoring programs	Section 2.3 Transition to Assessment Monitoring
§257.90(e)(5)	Other information specified in §257.90 through §257.98	Throughout report
§257.90(e)(6)	Overview at beginning of annual report	Executive Summary

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## 2 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the Ash Landfill for 2022. 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 2.4, and key activities planned for 2023 are described in Section 2.5.

### 2.1 Groundwater Monitoring System

#### 2.1.1 Documentation

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

#### 2.1.2 Changes to Monitoring System

The groundwater monitoring system was unchanged in 2022.

### 2.2 Monitoring and Analytical Results

Groundwater samples (Table 2) were collected from monitoring wells S-51, S-52, S-10R, S-13, S-14R, and S-3A-R during two semiannual sampling events and from monitoring well S-2A during one spring semiannual sampling event. Groundwater samples were collected from monitoring wells S-51 and S-3A-R during one verification resampling event. A total of nine groundwater samples were collected and analyzed for the constituents listed in appendix III (Part 257) in 2022 under the detection monitoring program, consistent with the requirements of §257.94(c). A total of six groundwater samples were collected and analyzed for the constituents listed in appendix IV (Part 257) in 2022 under the assessment monitoring program, consistent with the requirements of §257.95(b). Dates of sampling are reported on the field data sheets, and analytical laboratory reports are presented in Appendix A. Results are summarized in Table 3. Groundwater flow data, as required by §257.93(c), are presented in Figure 2, Figure 3, Figure 4, and Appendix B.

### 2.3 Transition to Assessment Monitoring

The Ash Landfill transitioned to assessment monitoring from detection monitoring on November 2, 2022, triggered by SSIs over background for calcium, sulfate, and total dissolved solids at monitoring well S-3A-R.

**Table 2          2022 Groundwater Sampling Summary**

Monitoring Location	Spring 2022 Sampling	Verification Resampling	Fall 2022 Sampling
<b>Date</b>	May 3, 2022	June 23, 2022	November 17, 2022
S-51 (background)	Appendix III	Appendix III	Appendix IV
S-52 (background)	Appendix III	Water level only	Appendix IV
S-10R	Appendix III	Water level only	Appendix IV
S-13	Appendix III	Water level only	Appendix IV
S-14R	Appendix III	Water level only	Appendix IV
S-2A	Appendix III	Water level only	Water level only (insufficient volume)
S-3A-R	Appendix III	Appendix III	Appendix IV
<b>Number of Samples</b>	<b>7</b>	<b>2</b>	<b>6</b>

## 2.4      Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program during 2022:

- Completed semiannual groundwater sampling under the detection monitoring program during spring 2022.
- Determined, pursuant to §257.93(h), that an SSI over background levels occurred for three of the constituents listed in appendix III at downgradient monitoring well S-3A-R during the spring 2022 detection monitoring sampling event. Statistical analysis was conducted according to the Statistical Analysis Plan, Appendix B of the CCR Groundwater Sampling and Analysis Plan (Carlson McCain, 2017).
- Transitioned to assessment monitoring program for the fall 2022 monitoring event.
- Completed initial groundwater sampling (§257.95(b)) under the assessment monitoring program. At the end of 2022, final analytical results from the initial assessment monitoring groundwater sampling event were pending and will be included in the 2023 Annual Report.

The following problems were encountered, and the following actions were taken to resolve them:

- Monitoring well S-2A yielded insufficient water volume for sampling during the fall 2022 assessment monitoring event. Water level and volume at S-2A will be reassessed during the next sampling event required under §257.95(d), and changes to the monitoring system will be undertaken if needed.

---

## 2.5 Key Activities for the Upcoming Year

The following key groundwater monitoring program activities are planned for 2023:

- Resample all wells for the constituents listed in appendix III and for those constituents in appendix IV that were detected during the fall 2022 initial assessment monitoring program sampling event, as per §257.95(d)(1).
- Establish groundwater protection standards for constituents in appendix IV.
- Continue the assessment monitoring program in accordance with the CCR Rule.
- Evaluate hydrogeologic conditions at monitoring well S-2A to determine whether monitoring system changes are needed for continued compliance with §257.91.

**Table 3**  
**Groundwater Analytical Data Summary**  
**Hoot Lake Station**  
**Otter Tail Power Company**

Location			S-10R	S-13	S-14R	S-2A	S-3A-R	S-3A-R	S-51	S-51	S-52
Date			5/03/2022	5/03/2022	5/03/2022	5/03/2022	5/03/2022	6/23/2022	5/03/2022	6/23/2022	5/03/2022
Sample Type			N	N	N	N	N	Resample	N	Resample	N
Parameter	Analysis Location	Units									
Appendix III											
Boron, total	Lab	mg/l	< 0.1 U	< 0.1 U	< 0.1 U	0.186	0.248	0.241	0.135	0.141	< 0.1
Calcium, total	Lab	mg/l	115.0	122.0	111.0	143.0	142.0	137.0	103.0	108.0	104.0
Chloride	Lab	mg/l	11.0	8.0	3.9	3.4	9.5	10.7	13.1	13.5	14.3
Fluoride	Lab	mg/l	0.180	0.210	0.240	0.240	0.190	0.200	0.240	0.230	0.220
pH	Field	pH units	6.89	7.30	7.24	6.76	7.21	7.14	6.53	7.11	6.62
Solids, total dissolved	Lab	mg/l	526	538	477	652	783	745	494	505	487
Sulfate, as SO4	Lab	mg/l	103	107	65.4	156	233	224	62.8	69.5	68.7
Groundwater elevation	Field	ft amsl	1209.77	1211.21	1201.86	1197.45	1203.92	1202.81	1238.56	1238.1	1216.17

N Sample Type: Normal Detection Monitoring  
U The analyte was analyzed for, but was not detected.

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## 3 References

Barr, 2016. Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant. Prepared for Otter Tail Power Company. November 2016.

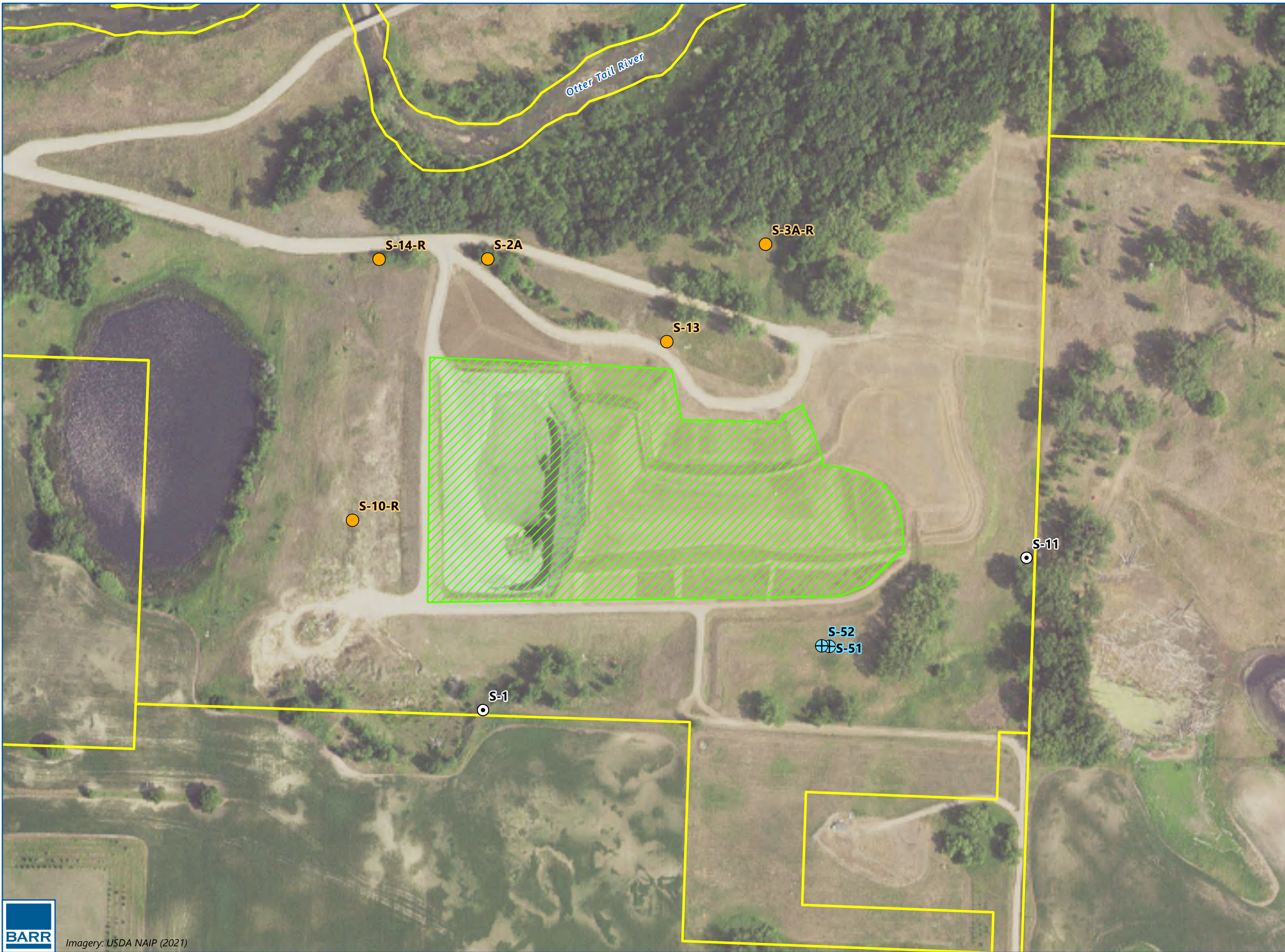
Barr, 2018. 2017 Annual Groundwater Monitoring and Corrective Action Report, Hoot Lake Plant. Prepared for Otter Tail Power Company. January 2018.

Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan (Including Statistical Method Selection and Certification), Ash Landfill-Hoot Lake Plant. Prepared for Otter Tail Power Company. October 2017.

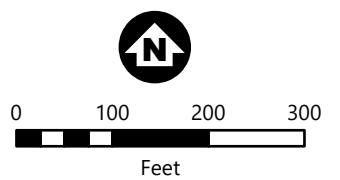


## Figures





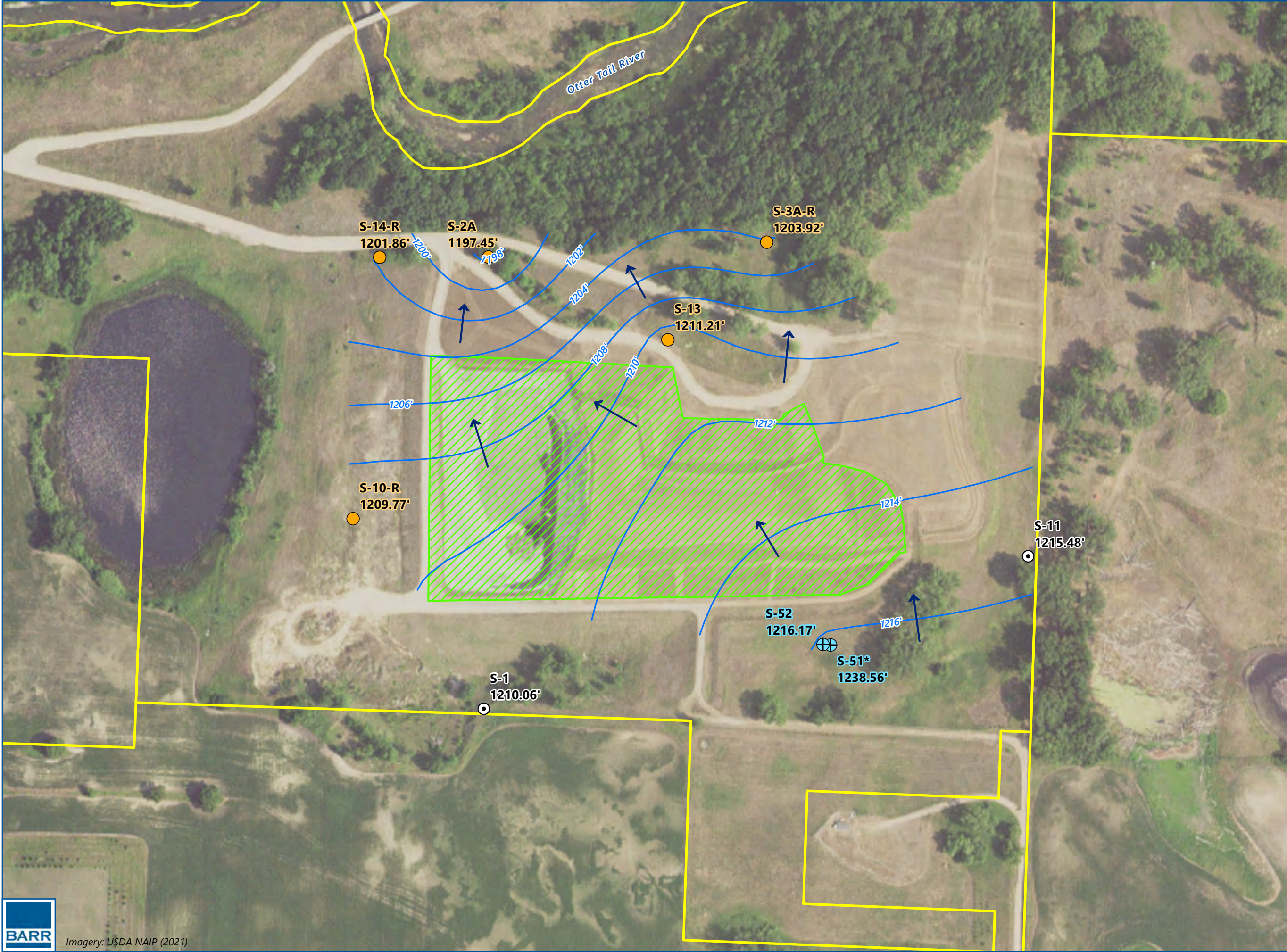
- Downgradient Monitoring Well
- Upgradient Monitoring Well
- Water Level Only Well
- Existing CCR Landfill (IL002)
- Otter Tail Power Company Parcels



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

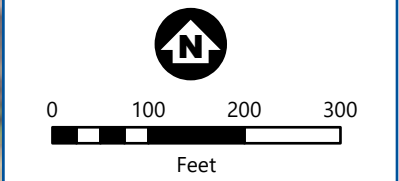
FIGURE 1





- Downgradient Monitoring Well
- ⊕ Upgradient Monitoring Well
- ⊙ Water Level Only Well
- ~ May 2022 Groundwater Contour (ft MSL)
- ➔ Groundwater Flow Direction
- Existing CCR Landfill (IL002)
- Yellow outline Otter Tail Power Company Parcels

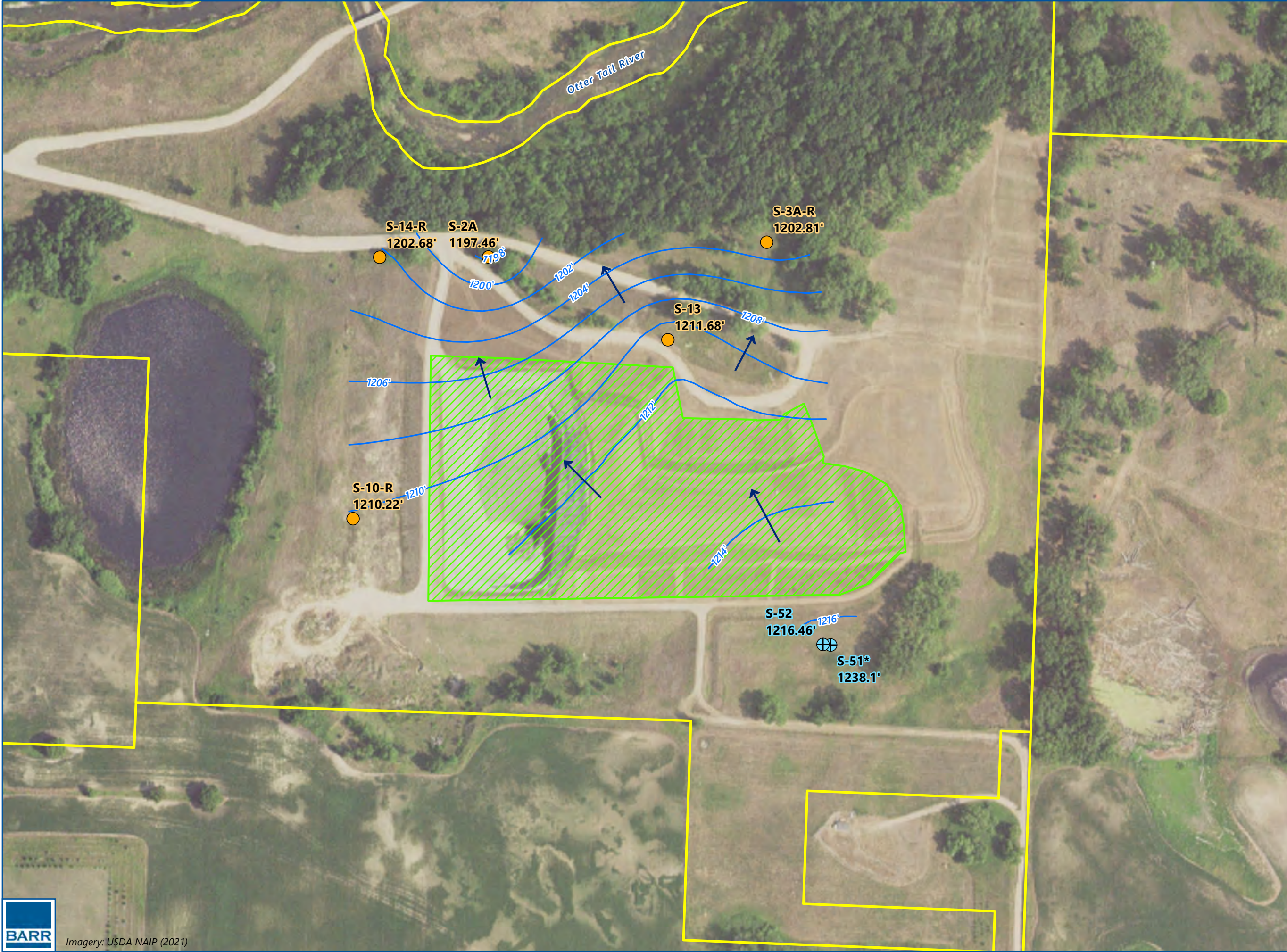
Note:  
\* Water level not included in contouring. Indicates level of intermediate aquifer.



MAY 2022  
GROUNDWATER CONTOURS  
Hoot Lake Ash Landfill  
Otter Tail Power Company  
Fergus Falls, MN

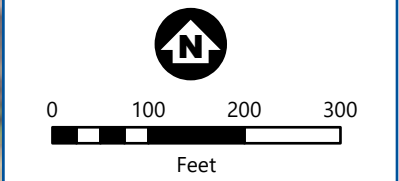
FIGURE 2





- Downgradient Monitoring Well
- Upgradient Monitoring Well
- June 2022 Groundwater Contour (ft MSL)
- Groundwater Flow Direction
- Existing CCR Landfill (IL002)
- Otter Tail Power Company Parcels

Note:  
\* Water level not included in contouring. Indicates level of intermediate aquifer.

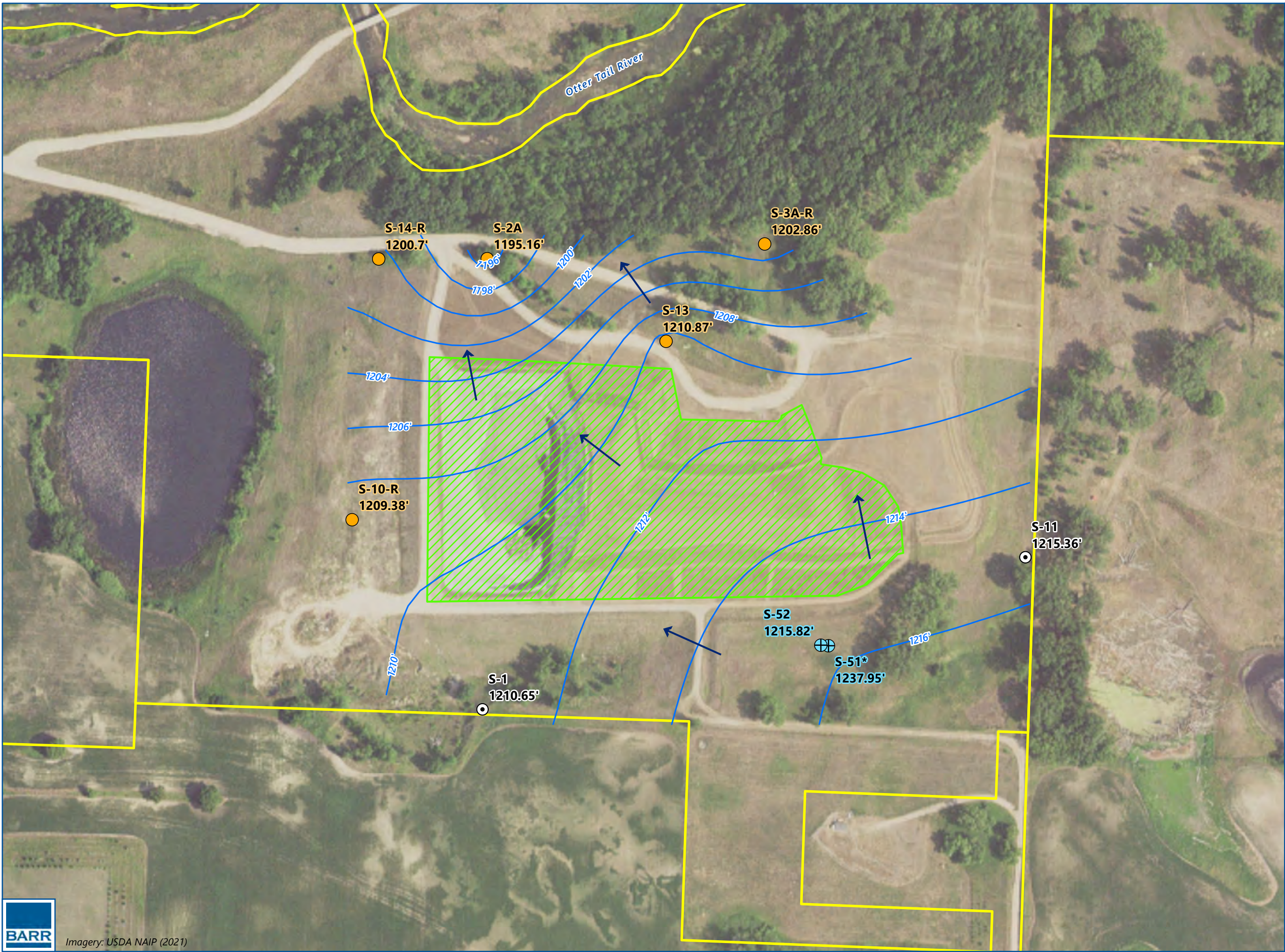


JUNE 2022  
GROUNDWATER CONTOURS  
Hoot Lake Ash Landfill  
Otter Tail Power Company  
Fergus Falls, MN

FIGURE 3

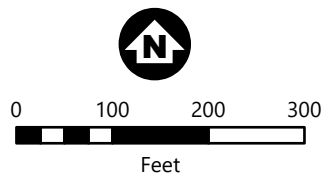


Bar Footer: ArcGISPro 3.0.3, 2023-01-24 19:51 File: \\Client\Other\_Tail\_Power\Hoot\_Lake\_Plant\Work\_Orders\CCR\_Compliance\_23561021\Maps\Reports\2022 Annual Monitoring Report.aprx Layout: Fig04 November 2022 Groundwater Contours User: MRQ



- Downgradient Monitoring Well
- ⊕ Upgradient Monitoring Well
- ⊙ Water Level Only Well
- ~ November 2022 Groundwater Contour (ft MSL)
- ➔ Groundwater Flow Direction
- ▨ Existing CCR Landfill (IL002)
- ▭ Otter Tail Power Company Parcels

Note:  
\* Water level not included in contouring. Indicates level of intermediate aquifer.



NOVEMBER 2022  
GROUNDWATER CONTOURS  
Hoot Lake Ash Landfill  
Otter Tail Power Company  
Fergus Falls, MN

FIGURE 4



Imagery: USDA NAIP (2021)



## Appendices

## **Appendix A**

### **Laboratory Reports and Field Sheets**



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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FINAL REPORT COMPLETION DATE: 25 May 22 AX

Date Reported: 23 May 2022

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Work Order #: 31-0180  
Account #: 006106  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Jeff Hoffman 24 May 22  
Field Service Manager/Date Reviewed  
[Signature] 23 May 22  
Chemistry Lab Manager/Date Reviewed  
[Signature] 23 May 22  
Quality Assurance Director/Date Reviewed

RL = Reporting Limits  
NQ = Not Present, Qualitative Only  
PQ = Present, Qualitative Only  
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.





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



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20760  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 14:25  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S2A

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	6.76	units	1.00	SM4500-H+-2011	3 May 22 14:25	BMW
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	156	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	3.4	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	652	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	143.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	0.186	mg/L	0.100	SW6010D	11 May 22 16:57	RMV
Fluoride	0.240 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20761  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 12:54  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Temp at Receipt: 0.0C

Project Name: HOOT LAKE PLANT CCR

Sample Description: S3AR

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	7.21	units	1.00	SM4500-H+-2011	3 May 22 12:54	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	233	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	9.5	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	783	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	142.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	0.248	mg/L	0.100	SW6010D	11 May 22 16:57	RMV
Fluoride	0.190 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	RMV

\* Holding Time Exceeded

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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20762  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 13:15  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Temp at Receipt: 0.0C

Project Name: HOOT LAKE PLANT CCR

Sample Description: S51

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	6.53	units	1.00	SM4500-H+-2011	3 May 22 13:15	BMW
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	62.8	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	13.1	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	494	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	103.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	0.135	mg/L	0.100	SW6010D	11 May 22 16:57	RMV
Fluoride	0.240 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes  
! = Due to sample quantity      + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20763  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 13:53  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S52

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	6.62	units	1.00	SM4500-H+-2011	3 May 22 13:53	BMW
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	68.7	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	14.3	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	487	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	104.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	< 0.1	mg/L	0.1	SW6010D	11 May 22 16:57	RMV
Fluoride	0.220 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes

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+ = Due to internal standard response

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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20764  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 15:30  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S10R

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	6.89	units	1.00	SM4500-H+-2011	3 May 22 15:30	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	103	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	11.0	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	526	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	115.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	< 0.1	mg/L	0.1	SW6010D	11 May 22 16:57	RMV
Fluoride	0.180 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 North Front 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  
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Page: 7 of 8

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20765  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 11:32  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S13

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	7.30	units	1.00	SM4500-H+-2011	3 May 22 11:32	MS
pH	* 7.3	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	107	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	8.0	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	538	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	122.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	< 0.1	mg/L	0.1	SW6010D	11 May 22 16:57	RMV
Fluoride	0.210 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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Page: 8 of 8

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 23 May 2022  
Lab Number: 22-A20766  
Work Order #: 31-0180  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 3 May 2022 12:15  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 4 May 2022 12:52  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S14R

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					6 May 22	JMS
pH, Field	7.24	units	1.00	SM4500-H+-2011	3 May 22 12:15	MS
pH	* 7.3	units	1.0	SM 4500 H+ B-2000	6 May 22 7:10	CC
Sulfate	65.4	mg/L	5.0	ASTM D516-11	12 May 22 6:54	KRM
Chloride	3.9	mg/L	3.0	SM 4500 Cl E	12 May 22 6:45	SS
Solids, Total Dissolved	477	mg/L	10	SM 2540 C-97	10 May 22 13:36	PJH
Calcium	111.0	mg/L	0.500	SW6010D	11 May 22 16:57	RMV
Boron	< 0.1	mg/L	0.1	SW6010D	11 May 22 16:57	RMV
Fluoride	0.240 @	mg/L	0.020	EPA 300.0	9 May 22 13:25	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 concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

**MVTL****MINNESOTA VALLEY TESTING LABORATORIES, INC.**

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Page: 1 of 1

**Quality Control Report**

Lab IDs: 22-A20760 to 22-A20766

Project: HOOT LAKE PLANT CCR

Work Order: 202231-0180

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	96	85-115	1.00	22A20785q	< 0.1	0.977	98	75-125	0.977	0.976	98	0.1	10	98	90-110	< 0.1
Calcium mg/L	50.00	101	85-115	50.0	22A20785q	36.10	86.80	101	75-125	86.80	85.80	99	1.2	10	99	90-110	< 0.5
Chloride mg/L	-	-	-	60.0	22-A20769	< 3	63.7	106	86-117	63.7	64.2	107	0.8	5	100	90-110	< 3
Fluoride mg/L	-	-	-	1.00	22-A20762	0.240	1.27	103	75-125	1.27	1.28	104	0.8	10	101	90-110	< 0.02
pH units	-	-	-	-	-	-	-	-	-	7.6	7.6	-	0.0	2.5	101	90-110	-
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	526 460	520 460	- -	1.1 0.0	7 10	100	85-115	< 10
Sulfate mg/L	-	-	-	50.0	22-A20766	65.4	119	107	68-132	119	118	105	0.8	5	92	80-120	< 5

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

This is an exact copy of  
the original document

By AS Date 4 May 22  
pages 1-11

<b>Project Name:</b> Otter Tail Power Co. Hoot Lake Plant		<b>Project Type:</b> CCR	<b>Name of Samplers:</b> BW MS
<b>Report To:</b> Otter Tail Power Company		<b>Carbon Copy:</b> BarrDM@barr.com	<b>Quote Number:</b>
<b>Attn:</b> Paul Vukonich		<b>Attn:</b>	<b>Work Order Number:</b> 31-180
<b>Address:</b> P.O. Box 496 Fergus Falls, MN 56038-0496		<b>Address:</b>	<b>Lab Numbers:</b>
<b>Phone:</b> 218-739-8349			

Phone: 218-739-8349

Sample Information							Bottle Type												Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 none	1000 HNO3	500 HNO3	Filter? Y or N	500 HNO3	Filter? Y or N	500H2SO4	1000 Amber H2SO4	500 NaOH	Other: 150 H2SO4	Other 150 None	Analysis Required
A20760	S2A		3 May 22	1425	GW			1		1	N								See Attached
61	S3AR			1254	GW			1		1	N								
62	S51			1315	GW			1		1	N								
63	S52			1353	GW			1		1	N								
64	S10R			1530	GW			1		1	N								
65	S13			1132	GW			1		1	N								
66	S14R			1215	GW			1		1	N								

Comments: CCR wells

Samples Relinquished By: <u>Ben Wor</u>				Samples Received By: <u>A. Audin</u>			
Date: <u>4 May 22</u>		Time: <u>1252</u>		Date: <u>4 May 22</u>		Time: <u>1252</u>	
Temp: <u>0.0 cm 785</u>		Temp: <u>0.0C</u>					
Samples Relinquished into: <u>Fridge</u> Log in Cart Other:							
Samples Relinquished By:				Samples Received By:			
Date:		Time:		Date:		Time:	
Temp:		Temp:		Temp:		Temp:	
Deliver: <u>Samplers</u> Other:				Seal Number(s) - If Used			
Transport: <u>Ambient</u> Ice Other:				Seals Intact? Yes No			

# Hoot Lake Site CCR Sampling - 2022

Site	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (gal/minute)	Goes Dry?
S2A	CCR 3	79.63	2	1273.776	Bladder	Yes	< 0.25	No
S3AR	CCR 3	78.42	2	1271.562	Bladder	Yes	< 0.25	No
S51	CCR 3	55.6	2	1286.904	Bladder	Yes	< 0.25	No
S52	CCR 3	88.3	2	1286.623	Bladder	Yes	< 0.25	No
S10R	CCR 3	57.00	2	1281.47	Bladder	Yes	< 0.25	No
S13	CCR 3	90.19	2	1296.423	Bladder	Yes	< 0.25	No
S14R	CCR 3	70.86	2	1280.61	Bladder	Yes	< 0.25	Yes

***Note: CCR samples must be on their own COC.***

Total Recoverable Metals! Groundwater samples shall not be field filtered prior to analysis.

CCR - Appendix III Detection Monitoring

**Field Parameters**

pH\*

\* Field and Laboratory Measurements

**Total Concentration Parameters**

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

**Method**

6010

6010

SM4500 CL E

EPA 300

SM 4500 H+B-96

ASTM D516

SM 2540 C-97

CCR - Appendix IV - Assessment Monitoring

***Total Concentration Parameters***

	<b>Method</b>
Antimony	SW6020A
Arsenic	SW602A
Barium	SW6010C
Beryllium	SW6020A
Cadmium	SW6020A
Chromium, Total	SW6020A
Cobalt	SW6010C
Fluoride	EPA 300
Lead	SW6020A
Lithium	SW6010C
Mercury	EPA 245.7
Molybdenum	SW6020A
Selenium	SW6020A
Thallium	SW6020A
Radium 226 + 228	

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 22

Unique Station ID: 444350

Sample ID: S-2A

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 79.62

Constructed Depth: 79.63

Casing Diameter: 2"

Water Level Before Purge: 75.45

Well Volume: .68 Gallons

Well Casing Elevation: 1273.776

Static Water Elevation: 1198.33

Previous Static: 1197.80

Water Level After Sample: 75.45

Measurement Method: ☒ Elec. WL ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 53 Wind: Low Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailor ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1416 am / ☒ pm

Time Purged Dry?

Time of Sampling: 1425 am / ☒ pm

Duplicate Sample? ☒ Yes ☐ No ID: —

Sample EH: -27.9

Sample Appearance: General: Clear Color: None Phase: None Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1419	6.76	479	12.65	2.12	9.6	.75	1	
1422	6.76	480	12.60	2.15	1.9	1.50	2	
1425	6.76	480	12.53	2.12	0.0	2.25	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 2.26 Gallons

Comments:

Exceptions to Protocol:

CCR

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 22

Unique Station ID: 674671

Sample ID: S-3A-R

## Well Condition

Well Locked? ☒ Yes No

Well Labeled? ☒ Yes No

Casing Straight? ☒ Yes No

Protective Posts? ☒ Yes No

State ID Tag? ☒ Yes No

Grout Seal Intact? Yes ☒ No

Repairs Necessary:

## Well Information

Well Depth: 78.40

Constructed Depth: 78.42

Casing Diameter: 2"

Water Level Before Purge: 67.64

Well Volume: 1.75 Gallons

Well Casing Elevation: 1271.562

Static Water Elevation: 1203.92

Previous Static: 1202.71

Water Level After Sample: 69.29

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 49 Wind: Low Sky: Fair

Sampling Method: Grundfos ☒ Bladder SST Disp. Bailer Whale Grab Other:

Dedicated Equipment: ☒ Yes No

Well Purged Dry? Yes ☒ No

Time Purged Dry:

Duplicate Sample? Yes ☒ No ID: —

Pumping Rate: 0.25 gpm

Time Pump Began: 1233 am ☒ pm

Time of Sampling: 1254 am ☒ pm

Sample EH: -39.5

Sample Appearance: General: clear Color: none Phase: Lt Sed Odor: Sulfurous

(7) Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1240	7.23	1029	9.37	5.30	3.6	1.75	1	
1247	7.22	1030	9.34	5.30	3.7	3.5	2	
1254	7.21	1033	9.33	5.38	4.4	5.25	3	
							4	
							5	

Stabilized? ☒ Yes No

Amount Water Removed: 5.25 Gallons

Comments:

Exceptions to Protocol:

CCR

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 11

Unique Station ID: 814830

Sample ID: S-51

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 55-60

Constructed Depth: 55.60

Casing Diameter: 2"

Water Level Before Purge: 48-34

Well Volume: 1.18 Gallons

Well Casing Elevation: 1286.904

Static Water Elevation: 1238.56

Previous Static: 1242.11

Water Level After Sample: 48-34

Measurement Method: ☒ Elec. W/L ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 52 Wind: LLV Sky: Fair

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1300 am / ☒ pm

Time Purged Dry:

Time of Sampling: 1315 am / ☒ pm

Duplicate Sample? ☒ Yes ☐ No ID: —

Sample EH: -89-5

Sample Appearance: General: Clear Color: None Phase: None Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1305</u>	<u>6.51</u>	<u>742</u>	<u>8.68</u>	<u>.57</u>	<u>0.0</u>	<u>1.25</u>	<u>1</u>	
<u>1310</u>	<u>6.53</u>	<u>742</u>	<u>8.67</u>	<u>.53</u>	<u>0.0</u>	<u>2.50</u>	<u>2</u>	
<u>1315</u>	<u>6.53</u>	<u>742</u>	<u>8.63</u>	<u>.51</u>	<u>0.0</u>	<u>3.75</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3.75 Gallons

Comments:

Exceptions to Protocol:

CCR

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 02

Unique Station ID: \_\_\_\_\_

Sample ID: S-52

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary: \_\_\_\_\_

## Well Information

Well Depth: 88.30

Constructed Depth: 88.30

Casing Diameter: 2"

Water Level Before Purge: 70.45

Well Volume: 2.91 Gallons

Well Casing Elevation: 1286.623

Static Water Elevation: 1216.17

Previous Static: 1216.71

Water Level After Sample: 70.45

Measurement Method: ☒ Elec. WL ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 62 Wind: LW Sky: Fair

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other: \_\_\_\_\_

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? ☐ Yes ☒ No

Time Pump Began: 1317 am / pm

Time Purged Dry: \_\_\_\_\_

Time of Sampling: 1353 am / pm

Duplicate Sample? ☒ Yes ☐ No

ID: Duplicate

Sample EH: -94.5

Sample Appearance: General: Clear Color: None Phase: None Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1329	6.61	713	8.57	.17	0.0	3	1	
1341	6.62	712	8.58	.17	0.0	6	2	
1353	6.62	713	8.57	.15	0.0	9	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 9 Gallons

Comments: \_\_\_\_\_

Exceptions to Protocol: \_\_\_\_\_

CCR



# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 22

Unique Station ID: 806341

Sample ID: S-10R

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 80.62

Constructed Depth: 57.00

Casing Diameter: 2"

Water Level Before Purge: 71.70

Well Volume: 1.46 Gallons

Well Casing Elevation: 1281.47

Static Water Elevation: 1209.77

Previous Static: 1210.07

Water Level After Sample: Below pump

Measurement Method: Elec. WLI Steel Tape

## Sampling Information

Weather Conditions: Temp: 49° Wind: L to S Sky: Fair

Sampling Method: Grundfos ☒ Bladder SSAT ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1512 am / pm

Time Purged Dry:

Time of Sampling: 1530 am / pm

Duplicate Sample? Yes ☒ No

Sample EH: -7.7

Sample Appearance: General: Clear Color: None Phase: Flakes Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1518	6.90	738	9.78	2.40	2.4	1.5	1	
1524	6.90	736	9.75	2.34	3.3	3.0	2	
1530	6.89	738	9.77	2.32	1.6	4.5	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 4.5 Gallons

Comments:

Exceptions to Protocol:

CCR

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 22

Unique Station ID: 632810

Sample ID: S-13

## Well Condition

Well Locked? ☒ Yes No

Well Labeled? ☒ Yes No

Casing Straight? ☒ Yes No

Protective Posts? ☒ Yes No

State ID Tag? ☒ Yes No

Grout Seal Intact? ☒ Yes No

Repairs Necessary:

## Well Information

Well Depth: 90.27

Well Casing Elevation: 1296.423

Constructed Depth: 90.19

Static Water Elevation: 1211.21

Casing Diameter: 2"

Previous Static: 1211.52

Water Level Before Purge: 85.21

Water Level After Sample: Below Pump

Well Volume: 0.82 Gallons

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 46 Wind: LEO Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T Disp. Bailer Whale Grab Other:

Dedicated Equipment: ☒ Yes No

Pumping Rate: 1.25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1120 am / pm

Time Purged Dry:

Time of Sampling: 1132 am / pm

Duplicate Sample? Yes ☒ No ID: —

Sample EH: 240.1

Sample Appearance: General: Silty Color: tan Phase: 2+ Sed Odor: Sulfurous

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1124	7.30	651	12.25	3.60	25.6	1	1	
1128	7.29	655	12.25	3.40	21.1	2	2	
1132	7.30	657	12.30	3.49	20.9	3	3	
							4	
							5	

Stabilized? ☒ Yes No

Amount Water Removed: 3 Gallons

Comments:

Exceptions to Protocol:

EBQ 1115  
ph: 6.67  
cond: 8  
Temp: 16.95  
Turb: 0.4  
EH: 236.7  
DO: 8.66

CCR

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 3 May 22

Unique Station ID: 806342

Sample ID: S-14R

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 87.11

Constructed Depth: 70.86

Casing Diameter: 2"

Water Level Before Purge: 78.75

Well Volume: 1.36 Gallons

Well Casing Elevation: 1280.61

Static Water Elevation: 1201.86

Previous Static: 1202.19

Water Level After Sample: 83.4

Measurement Method: Elec. WLI Steel Tape

## Sampling Information

Weather Conditions: Temp: 48 Wind: LEU Sky: fair

Sampling Method: Grundfos ☒ Bladder S&T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 0.25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1157 am / pm

Time Purged Dry?

Time of Sampling: 1215 am ☒ pm

Duplicate Sample? Yes ☒ No ID:

Sample EH: -17.6

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time, 2023	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1200	7.23	747	9.42	4.28	18.0	1.50	1	
1209	7.23	747	9.50	5.01	17.9	3.0	2	
1215	7.24	748	9.56	5.06	17.1	4.5	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 4.5 Gallons

Comments:

Exceptions to Protocol:

CCR



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REVISION 1

FINAL REPORT COMPLETION DATE: 16 Sept 22 AX

Date Reported: 15 Sep 2022

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Work Order #: 31-0286  
Account #: 006106  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

[Signature] 16 Sept 22  
Field Service Manager/Date Reviewed  
[Signature] 15 Sept 22  
Chemistry Lab Manager/Date Reviewed  
[Signature] for 15 Sept 22  
Quality Assurance Director/Date Reviewed

RL = Reporting Limits  
NQ = Not Present, Qualitative Only  
PQ = Present, Qualitative Only  
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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Page: 2 of 10

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 15 Sep 2022  
Lab Number: 22-A31806  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:53  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-3A-R

Temp at Receipt: 0.8C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					24 Jun 22	JMS
pH, Field	7.14	units	1.00	SM4500-H+-2011	23 Jun 22 10:53	MS
pH	* 7.3	units	1.0	SM 4500 H+ B-2000	24 Jun 22 7:18	JD
Solids, Total Dissolved	745	mg/L	10	SM 2540 C-97	28 Jun 22 13:00	MDH
Calcium	137.0	mg/L	0.500	SW6010D	27 Jun 22 20:03	TMM
Magnesium	50.90	mg/L	0.500	SW6010D	27 Jun 22 20:03	TMM
Sodium	27.20	mg/L	0.500	SW6010D	27 Jun 22 20:03	TMM
Potassium	6.320 ^	mg/L	0.500	SW6010D	27 Jun 22 20:03	TMM
Boron	0.241	mg/L	0.100	SW6010D	27 Jun 22 20:03	TMM
Fluoride	0.200 ~	mg/L	0.020	EPA 300.0	27 Jun 22 10:55	MDH
Sulfate	224 ~	mg/L	0.150	EPA 300.0	27 Jun 22 10:55	MDH
Chloride	10.7 ~	mg/L	0.030	EPA 300.0	27 Jun 22 10:55	MDH

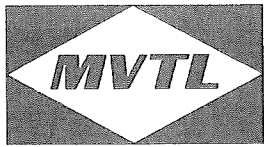
\* Holding Time Exceeded

~ Sample diluted due to result above calibration of linear range.

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040

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Date Reported: 15 Sep 2022

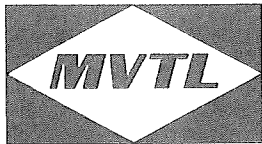
JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Work Order #: 202231-0286  
Account Number: 006106  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

## LABORATORY NARRATIVE

Amended Report 14 Sept 2022  
Added results for Magnesium, Sodium and Potassium per client request.



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31807  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:05  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-51

Temp at Receipt: 0.8C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					24 Jun 22	JMS
pH, Field	7.11	units	1.00	SM4500-H+-2011	23 Jun 22 10:05	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	24 Jun 22 7:18	JD
Solids, Total Dissolved	505	mg/L	10	SM 2540 C-97	28 Jun 22 13:00	MDH
Calcium	108.0	mg/L	0.500	SW6010D	27 Jun 22 20:03	TMM
Boron	0.141	mg/L	0.100	SW6010D	27 Jun 22 20:03	TMM
Fluoride	0.230 ~	mg/L	0.020	EPA 300.0	27 Jun 22 10:55	MDH
Sulfate	69.5 ~	mg/L	0.150	EPA 300.0	27 Jun 22 10:55	MDH
Chloride	13.5 ~	mg/L	0.030	EPA 300.0	27 Jun 22 10:55	MDH

\* Holding Time Exceeded

~ Sample diluted due to result above calibration of linear range.

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 ND WW/DW # R-040

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Date Reported: 1 Jul 2022

JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Work Order #: 202231-0286  
Account Number: 006106  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

## LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES:  
No problems were encountered.





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31808  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:24  
Sampled By: MVTl FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-2A

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Well Depth, Field	79.62	feet	NA	Field	23 Jun 22 10:24	MS
Water Level Before Purge	75.44	feet	NA	NA	23 Jun 22 10:24	MS
Static Elevation, Field	1198.33	ft	NA	Field	23 Jun 22 10:24	MS

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 ND WW/DW # R-040

MVTl guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTl to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTl. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31809  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:02  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-52

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Well Depth, Field	88.30	feet	NA	Field	23 Jun 22 10:02	MS
Water Level Before Purge	70.16	feet	NA	NA	23 Jun 22 10:02	MS
Static Elevation, Field	1216.46	ft	NA	Field	23 Jun 22 10:02	MS

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 concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31810  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:17  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-10R

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Well Depth, Field	80.62	feet	NA	Field	23 Jun 22 10:17	MS
Water Level Before Purge	71.25	feet	NA	NA	23 Jun 22 10:17	MS
Static Elevation, Field	1210.22	ft	NA	Field	23 Jun 22 10:17	MS

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

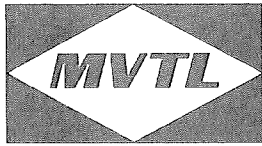
# = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31811  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:27  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-13

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Well Depth, Field	90.27	feet	NA	Field	23 Jun 22 10:27	MS
Water Level Before Purge	84.74	feet	NA	NA	23 Jun 22 10:27	MS
Static Elevation, Field	1211.68	ft	NA	Field	23 Jun 22 10:27	MS

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 ND WW/DW # R-040

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JOSH HOLLEN  
OTTER TAIL POWER CO  
PO BOX 496  
FERGUS FALLS MN 56538-0496

Report Date: 1 Jul 2022  
Lab Number: 22-A31812  
Work Order #: 31-0286  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 23 Jun 2022 10:20  
Sampled By: MVTl FIELD PERSONNEL  
Date Received: 23 Jun 2022 14:29  
PO #: 59640

Project Name: HOOT LAKE PLANT CCR

Sample Description: S-14R

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Well Depth, Field	87.11	feet	NA	Field	23 Jun 22 10:20	MS
Water Level Before Purge	77.93	feet	NA	NA	23 Jun 22 10:20	MS
Static Elevation, Field	1202.68	ft	NA	Field	23 Jun 22 10:20	MS

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 concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

**MVTL****MINNESOTA VALLEY TESTING LABORATORIES, INC.**

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**Quality Control Report**

Lab IDs: 22-A31806 to 22-A31807

Project: HOOT LAKE PLANT CCR

Work Order: 202231-0286

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	97	85-115	1.00	22A31280qc	0.467	1.460	99	75-125	1.460	1.450	98	0.7	10	99	90-110	< 0.1
Calcium mg/L	50.00	94	85-115	50.0	22A31280qc	120.0	170.0	100	75-125	170.0	168.0	96	1.2	10	101	90-110	< 0.5
Chloride mg/L	-	-	-	6.00	22-A31807	13.5	19.4	98	75-125	19.4	19.3	97	0.5	10	101	90-110	< 0.03
Fluoride mg/L	-	-	-	1.00	22-A30181	0.940	2.00	106	75-125	2.00	1.97	103	1.5	10	102	90-110	< 0.02
	-	-	-	1.00	22-A31807	0.230	1.26	103	75-125	1.26	1.27	104	0.8	10	-	-	-
Magnesium mg/L	50.00	101	85-115	50.0	22A31280qc	48.80	100.0	102	75-125	100.0	100.0	102	0.0	10	101	90-110	< 0.5
pH units	-	-	-	-	-	-	-	-	-	7.6	7.6	-	0.0	2.5	101	90-110	-
Potassium mg/L	50.00	104	85-115	50.0	22A31280qc	5.840	58.20	105	75-125	58.20	58.70	106	0.9	10	102	90-110	< 0.5
Sodium mg/L	50.00	107	85-115	50.0	22A31280qc	151.0	207.0	112	75-125	207.0	205.0	108	1.0	10	104	90-110	< 0.5
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	505	509	-	0.8	7	102	85-115	< 10
	-	-	-	-	-	-	-	-	-	2120	2070	-	2.4	7			
Sulfate mg/L				30.0	22-A31807	69.5	100	102		100	99.5	100	0.5		102		< 0.15

Approved by:



**MVTL****MINNESOTA VALLEY TESTING LABORATORIES, INC.**

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**Quality Control Report**

Lab IDs: 22-A31806 to 22-A31807

Project: HOOT LAKE PLANT CCR

Work Order: 202231-0286

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	97	85-115	1.00	22A31280qc	0.467	1.460	99	75-125	1.460	1.450	98	0.7	10	99	90-110	< 0.1
Calcium mg/L	50.00	94	85-115	50.0	22A31280qc	120.0	170.0	100	75-125	170.0	168.0	96	1.2	10	101	90-110	< 0.5
Chloride mg/L	-	-	-	6.00	22-A31807	13.5	19.4	98	86-117	19.4	19.3	97	0.5	5	101	90-110	< 0.03
Fluoride mg/L	-	-	-	1.00 1.00	22-A30181 22-A31807	0.940 0.230	2.00 1.26	106 103	75-125 75-125	2.00 1.26	1.97 1.27	103 104	1.5 0.8	10 10	102	90-110	< 0.02
pH units	-	-	-	-	-	-	-	-	-	7.6	7.6	-	0.0	2.5	101	90-110	-
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	505 2120	509 2070	-	0.8 2.4	7 7	102	85-115	< 10
Sulfate mg/L	-	-	-	30.0	22-A31807	69.5	100	102	68-132	100	99.5	100	0.5	5	102	80-120	< 0.15

Approved by:



# Minnesota Valley Testing Laboratories

1126 North Front Street

New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

## Field Service Chain of Custody Record

This is an exact copy of  
the original document

By AS Date 23 June 22  
pages 1-10

<b>Project Name:</b> Otter Tail Power Co. Hoot Lake Plant	<b>Project Type:</b> CCR	<b>Name of Samplers:</b> Matt Stan Ben Wolf
<b>Report To:</b> Otter Tail Power Company	<b>Carbon Copy:</b> BarrDM@barr.com	<b>Quote Number:</b>
<b>Attn:</b> Paul Vukonich	<b>Attn:</b>	<b>Work Order Number:</b> 31-00286
<b>Address:</b> P.O. Box 496 Fergus Falls, MN 56038-0496	<b>Address:</b>	<b>Lab Numbers:</b>
<b>Phone:</b> 218-739-8349		

Sample Information							Bottle Type												Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 none	1000 HNO3	500 HNO3	Filter? Y or N	500 HNO3	Filter? Y or N	500H2SO4	1000 Amber H2SO4	500 NaOH	Other: 150 H2SO4	Other 150 None	Analysis Required
																			See Attached
A31806	S3AR		23 June 22	1653	GW			1		1	N								
07	S51		23 June 22	1605	GW			1		1	N								

Comments: CCR wells

\*Rush Analysis!!

Samples Relinquished By: <u>[Signature]</u>				Samples Received By: <u>A. Auden</u>			
Date: <u>23 June 22</u>		Time: <u>1429</u>		Date: <u>23 June 22</u>		Time: <u>1429</u>	
Temp: <u>0.81615</u>		Temp: <u>0.81</u>		Temp: <u>0.81</u>		Temp: <u>0.81</u>	
Samples Relinquished into: <u>Fridge</u> Log in Cart Other:							
Samples Relinquished By:				Samples Received By:			
Date:		Time:		Date:		Time:	
Temp:		Temp:		Temp:		Temp:	
Delivery: Samplers Other:				Seal Number(s) - If Used			
Transport: Ambient Ice Other:				Seals Intact? Yes No			



June 23

Jeff Hoffman

**From:** Hollen, Josh <jhollen@otpc.com>  
**Sent:** Monday, June 13, 2022 12:16 PM  
**To:** Jeff Hoffman  
**Subject:** Hoot Lake - CCR Resampling

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Jeff,

We need to conduct resampling at Hoot Lake ASAP. It is CCR groundwater sampling. We need to resample S-3A-R for the following:

CCR - Appendix III Detection Monitoring	
<b>Field Parameters</b>	
pH*	
* Field and Laboratory Measurements	
<b>Total Concentration Parameters</b>	<b>Method</b>
Boron	6010
Calcium	6010
Chloride	SM4500 CL E
Fluoride	EPA 300
pH	SM 4500 H+B-96
Sulfate	ASTM D516
Dissolved Solids, Total	SM 2540 C-97

Also, bring enough bottles to sample an additional well. We may need to resample upgradient well S-51 for the entire list of parameters listed above.

And last but not least, we will need to get water levels for all the CCR wells. So a water level on the following wells as part of the resampling, just use your normal field sheets.

# Hoot Lake Site CCR S

Well	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	E
S2A	CCR 3	79.63	2	1273.776	
S3AR	CCR 3	78.42	2	1271.562	
S51	CCR 3	55.6	2	1286.904	
S52	CCR 3	88.3	2	1286.623	
S10R	CCR 3	57.00	2	1281.47	
S13	CCR 3	90.19	2	1296.423	
S14R	CCR 3	70.86	2	1280.61	

***Note: CCR samples must be on their own COC.***

Thank you.



***Josh Hollen***

Environmental Compliance Specialist  
Environmental Services Dept.

Phone: (218) 739-8314

otpc.com



# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

ms  
Bw

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 22

Unique Station ID: 674671

Sample ID: S-3A-R

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☐ Yes ☒ No

Repairs Necessary:

## Well Information

Well Depth: 78.40

Well Casing Elevation: 1271.562

Constructed Depth: 78.42

Static Water Elevation: 1202.81

Casing Diameter: 2"

Previous Static: 1202.71

Water Level Before Purge: 68.75

Water Level After Sample: 68.91

Well Volume: 1.57 Gallons

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: SE 15 Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 0.25 gpm

Well Purged Dry? ☐ Yes ☒ No

Time Pump Began: 1032 (am) / pm

Time Purged Dry? —

Time of Sampling: 1053 (am) / pm

Duplicate Sample? ☐ Yes ☒ No ID: —

Sample EH: 47.9

Sample Appearance: General: Clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1039</u>	<u>7.20</u>	<u>862</u>	<u>10.10</u>	<u>5.98</u>	<u>4.3</u>	<u>1.75</u>	<u>1</u>	
<u>1046</u>	<u>7.17</u>	<u>862</u>	<u>10.02</u>	<u>5.73</u>	<u>3.5</u>	<u>3.5</u>	<u>2</u>	
<u>1053</u>	<u>7.14</u>	<u>862</u>	<u>10.04</u>	<u>5.55</u>	<u>6.5</u>	<u>5.25</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 5.25 Gallons

Comments:

Exceptions to Protocol:

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

BW

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 27

Unique Station ID: 814830

Sample ID: S-51

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? Yes ☒ No ☐

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 55.60

Constructed Depth: 55.60

Casing Diameter: 2"

Water Level Before Purge: 48.80

Well Volume: 1.10 Gallons

Well Casing Elevation: 1286.904

Static Water Elevation: 1238.14

Previous Static: 1242.11

Water Level After Sample: 48.82

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: S-15 Sky: Part

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 0.25 gpm

Well Purged Dry? Yes ☒ No ☐

Time Pump Began: 9:50 am / pm

Time Purged Dry? -

Time of Sampling: 10:05 am / pm

Duplicate Sample? Yes ☒ No ☐ ID: -

Sample EH: 39.0

Sample Appearance: General: Clear Color: none Phase: none Odor: none

(5) Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
955	7.25	673	9.70	5.19	4.7	1.25	1	
1000	7.17	676	9.51	5.29	3.9	2.5	2	
1005	7.11	679	9.35	5.29	3.4	3.75	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3.75 Gallons

Comments:

Exceptions to Protocol:

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

BW

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 22

Unique Station ID: 444350

Sample ID: S-2A

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 79.62

Well Casing Elevation: 1273.776

Constructed Depth: 79.63

Static Water Elevation: 1198.33

Casing Diameter: 2"

Previous Static: 1197.80

Water Level Before Purge: 75.44

Water Level After Sample: —

Well Volume: 0.68 Gallons

Measurement Method: ☒ Elec WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: S-15 Sky: Fair

Sampling Method: Grundfos ☒ Bladder SSG ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: — gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: — am / pm

Time Purged Dry? —

Time of Sampling: 1024 am / pm

Duplicate Sample? ☒ Yes ☐ No

ID: —

Sample EH: —

Sample Appearance: General: —

Color: —

Phase: —

Odor: —

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: — Gallons

Comments:

Exceptions to Protocol:

W. L. only

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

BW

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 20

Unique Station ID:

Sample ID: S-52

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 88.30

Constructed Depth: 88.30

Casing Diameter: 2"

Water Level Before Purge: 70.16

Well Volume: 2.95 Gallons

Well Casing Elevation: 1286.623

Static Water Elevation: 1216.46

Previous Static: 1216.71

Water Level After Sample: 121

Measurement Method: Elec. VLI Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: S-15 Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No Pumping Rate: — gpm

Well Purged Dry? Yes ☒ No ☐ Time Pump Began: — am / pm

Time Purged Dry? — Time of Sampling: 1002 am / pm

Duplicate Sample? Yes ☐ No ☒ ID: — Sample EH: —

Sample Appearance: General: — Color: — Phase: — Odor: —

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? Yes ☐ No ☒

Amount Water Removed: — Gallons

Comments:

Exceptions to Protocol:

W. L. only

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 22

Unique Station ID: 806341

Sample ID: S-10R

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 80.62

Well Casing Elevation: 1281.47

Constructed Depth: 57.00

Static Water Elevation: 1210.22

Casing Diameter: 2"

Previous Static: 1210.67

Water Level Before Purge: 71.25

Water Level After Sample: ~

Well Volume: 1.52 Gallons

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: SE 15 Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No Pumping Rate: — gpm

Well Purged Dry? ☒ Yes ☐ No Time Pump Began: — am / pm

Time Purged Dry: — Time of Sampling: 1017 (am) / pm

Duplicate Sample? ☒ Yes ☐ No ID: — Sample EH: —

Sample Appearance: General: — Color: — Phase: — Odor: —

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: — Gallons

Comments:

W.L. only

Exceptions to Protocol:

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

BW

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 27

Unique Station ID: 632810

Sample ID: S-13

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 90.27

Constructed Depth: 90.19

Casing Diameter: 2"

Water Level Before Purge: 84.74

Well Volume: 0.90 Gallons

Well Casing Elevation: 1296.423

Static Water Elevation: 1211.68

Previous Static: 1211.52

Water Level After Sample: —

Measurement Method: Elec. WLI Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: S-15 Sky: Fair

Sampling Method: Grundfos ~~Bladder SS/T~~ Disp. Bailer Whale Grab Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: — gpm

Well Purged Dry? Yes ☒ No ☐

Time Pump Began: — am / pm

Time Purged Dry? —

Time of Sampling: 1027 am / pm

Duplicate Sample? Yes ☐ No ☒ ID: —

Sample EH: —

Sample Appearance: General: — Color: — Phase: — Odor: —

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? Yes ☒ No ☐

Amount Water Removed: — Gallons

Comments:

Exceptions to Protocol:

W.L. only



# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 23 June 22

Unique Station ID: 806342

Sample ID: S-14R

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 87.11

Well Casing Elevation: 1280.61

Constructed Depth: 70.86

Static Water Elevation: 1202.68

Casing Diameter: 2"

Previous Static: 1202.19

Water Level Before Purge: 77.93

Water Level After Sample: —

Well Volume: 1.49 Gallons

Measurement Method: Elec. WLI Steel Tape

## Sampling Information

Weather Conditions: Temp: 80 Wind: S-15 Sky: Fair

Sampling Method: Grundfos ☒ Bladder SS/T Disp. Bailer Whale Grab Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: — gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: — am / pm

Time Purged Dry: —

Time of Sampling: 1020 am / pm

Duplicate Sample? ☒ Yes ☐ No ID: —

Sample EH: —

Sample Appearance: General: — Color: — Phase: — Odor: —

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: — Gallons

Comments:

WL only

Exceptions to Protocol:



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890  
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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
www.mvttl.com



Page: 1 of 13

FINAL REPORT COMPLETION DATE: 29 Dec 22 AH

Date Reported: 28 Dec 2022

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

Work Order #: 31-0547  
Account #: 006106  
PO #: 59640

Project Name: HOOT LAKE CCR

*Jeff Hoffman* 29 Dec 22  
Field Service Manager/Date Reviewed

*[Signature]* 28 Dec 22  
Chemistry Lab Manager/Date Reviewed

*[Signature]* 28 Dec 22  
Quality Assurance Director/Date Reviewed

RL = Reporting Limits  
NQ = Not Present, Qualitative Only  
PQ = Present, Qualitative Only  
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 2 of 13

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56722  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 13:33  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S3AR

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.022	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.046	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	1.74	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	3.53 ^	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.220 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 3 of 13

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56723  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 12:00  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S51

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.021	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.071	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	0.72	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	1.55	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	2.88	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.230 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.





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

Report Date: 28 Dec 2022  
Lab Number: 22-A56724  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 12:45  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S52

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.021	mg/L	0.020	SW6010D	21 Nov 22 13:50	RMV
Barium	0.111	mg/L	0.005	SW6010D	21 Nov 22 13:50	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 13:50	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	1.78	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	1.63	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.210 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040



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

Report Date: 28 Dec 2022  
Lab Number: 22-A56725  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 12:58  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S10R

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.021	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.092	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	10.5	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	0.93	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	1.93	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.190 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

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# = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56726  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 11:37  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S13

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.023	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.066	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	3.15	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	0.12	ug/L	0.10	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.230 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

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

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# = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56727  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 12:15  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S14R

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.029	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.048	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	2.92	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	2.24	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.250 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

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

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! = Due to sample quantity

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

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56728  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 11:37  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S6

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005 ug/L		0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	< 0.02 mg/L		0.02	SW6010D	21 Nov 22 12:33	RMV
Barium	0.065 mg/L		0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005 mg/L		0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5 ug/L		0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	< 0.5 ug/L		0.5	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05 ug/L		0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1 ug/L		0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5 ug/L		0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5 ug/L		0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	2.54 ug/L		0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^ ug/L		0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1 ug/L		0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.250 @ mg/L		0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

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

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! = Due to sample quantity

# = Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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

Report Date: 28 Dec 2022  
Lab Number: 22-A56729  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 12:11  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S11

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.022	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.061	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	0.84	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Chromium	1.00	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Lead	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	4.89	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.230 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

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

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! = Due to sample quantity

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+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040



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

Report Date: 28 Dec 2022  
Lab Number: 22-A56730  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 13:10  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: M1

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.027	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.091	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Arsenic	9.95	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	0.12	ug/L	0.10	SW6020B	22 Nov 22 19:08	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Lead	4.01	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	1.84	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 19:08	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.250 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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:

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! = Due to sample quantity

# = Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040





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

Report Date: 28 Dec 2022  
Lab Number: 22-A56731  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 13:07  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S1

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	0.015	ug/L	0.005	EPA 245.7	23 Nov 22 12:07	RMB
Lithium	0.026	mg/L	0.020	SW6010D	21 Nov 22 12:33	RMV
Barium	0.139	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Cobalt	0.005	mg/L	0.005	SW6010D	21 Nov 22 12:33	RMV
Antimony	0.77	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Arsenic	3.42	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Beryllium	0.35	ug/L	0.05	SW6020B	23 Nov 22 11:02	KAM
Cadmium	0.24	ug/L	0.10	SW6020B	22 Nov 22 19:08	KAM
Chromium	12.7	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Lead	9.20	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Molybdenum	2.31	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Selenium	3.68 ^	ug/L	0.50	SW6020B	22 Nov 22 19:08	KAM
Thallium	0.13	ug/L	0.10	SW6020B	22 Nov 22 19:08	KAM
Fluoride	0.170 @	mg/L	0.020	EPA 300.0	19 Nov 22 11:29	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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Page: 12 of 13

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

Report Date: 28 Dec 2022  
Lab Number: 22-A56732  
Work Order #: 31-0547  
Account #: 006106  
Sample Matrix: GROUNDWATER  
Date Sampled: 17 Nov 2022 13:30  
Sampled By: MVTL FIELD PERSONNEL  
Date Received: 17 Nov 2022 18:08  
PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: M3

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:58	RMB
Lithium	0.028	mg/L	0.020	SW6010D	21 Nov 22 13:11	RMV
Barium	0.145	mg/L	0.005	SW6010D	21 Nov 22 13:11	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 13:11	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 20:01	KAM
Arsenic	5.83	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:35	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 20:01	KAM
Chromium	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 20:01	KAM
Lead	6.79	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Molybdenum	3.61	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Selenium	< 1 ^	ug/L	0.5	SW6020B	22 Nov 22 20:01	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 20:01	KAM
Fluoride	0.220 @	mg/L	0.020	EPA 300.0	19 Nov 22 16:23	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 ND WW/DW # R-040

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Page: 13 of 13

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

Report Date: 28 Dec 2022  
 Lab Number: 22-A56733  
 Work Order #: 31-0547  
 Account #: 006106  
 Sample Matrix: GROUNDWATER  
 Date Sampled: 17 Nov 2022 13:27  
 Sampled By: MVTL FIELD PERSONNEL  
 Date Received: 17 Nov 2022 18:08  
 PO #: 59640

Project Name: HOOT LAKE CCR

Sample Description: S3

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Nov 22	RRA
Water Digestions					20 Nov 22	RRA
Mercury	< 0.005	ug/L	0.005	EPA 245.7	23 Nov 22 12:58	RMB
Lithium	< 0.02	mg/L	0.02	SW6010D	21 Nov 22 13:11	RMV
Barium	0.095	mg/L	0.005	SW6010D	21 Nov 22 13:11	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010D	21 Nov 22 13:11	RMV
Antimony	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 20:01	KAM
Arsenic	< 0.5	ug/L	0.5	SW6020B	22 Nov 22 20:01	KAM
Beryllium	< 0.05	ug/L	0.05	SW6020B	23 Nov 22 11:35	KAM
Cadmium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 20:01	KAM
Chromium	1.38	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Lead	0.55	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Molybdenum	2.54	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Selenium	1.31 ^	ug/L	0.50	SW6020B	22 Nov 22 20:01	KAM
Thallium	< 0.1	ug/L	0.1	SW6020B	22 Nov 22 20:01	KAM
Fluoride	0.200 @	mg/L	0.020	EPA 300.0	19 Nov 22 16:23	MDH

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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:

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# = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 ND WW/DW # R-040

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Page: 1 of 2

**Quality Control Report**

Lab IDs: 22-A56722 to 22-A56733

Project: HOOT LAKE CCR

Work Order: 202231-0547

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<=)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0	102	85-115	25.0	22A56722q	< 0.5	26.0	104	75-125	26.0	27.2	109	4.5	10	94	90-110	< 0.5
	25.0	102	85-115	25.0	22A56733q	< 0.5	26.3	105	75-125	26.3	26.7	107	1.5	10	100	90-110	< 0.5
Arsenic ug/L	25.0	98	85-115	25.0	22A56722q	< 0.5	26.0	104	75-125	26.0	26.4	106	1.5	10	98	90-110	< 0.5
	25.0	98	85-115	25.0	22A56733q	< 0.5	26.5	106	75-125	26.5	26.4	106	0.4	10	96	90-110	< 0.5
Barium mg/L	1.000	100	85-115	1.00	22A56725q	0.092	1.100	101	75-125	1.100	1.110	102	0.9	10	101	90-110	< 0.005
	1.000	100	85-115	1.00	22A56724q	0.111	1.130	102	75-125	1.130	1.140	103	0.9	10	100	90-110	< 0.005
	1.000	102	85-115	1.00	a56564qc	0.089	1.100	101	75-125	1.100	1.100	101	0.0	10	100	90-110	< 0.005
	1.000	100	85-115	1.00	22A56714q	0.056	1.060	100	75-125	1.060	1.070	101	0.9	10	-	-	< 0.005
Beryllium ug/L	2.50	112	85-115	2.50	22-A56722	< 0.05	2.45	98	75-125	2.45	2.48	99	1.2	10	100	90-110	< 0.05
	2.50	112	85-115	2.50	22-A56733	< 0.05	2.44	98	75-125	2.44	2.47	99	1.2	10	103	90-110	< 0.05
Cadmium ug/L	5.00	99	85-115	5.00	22A56722q	< 0.1	4.95	99	75-125	4.95	5.11	102	3.2	10	94	90-110	< 0.1
	5.00	99	85-115	5.00	22A56733q	< 0.1	5.07	101	75-125	5.07	5.08	102	0.2	10	100	90-110	< 0.1
Chromium ug/L	25.0	100	85-115	25.0	22A56722q	< 0.5	23.6	94	75-125	23.6	24.1	96	2.1	10	102	90-110	< 0.5
	25.0	100	85-115	25.0	22A56733q	1.38	25.3	96	75-125	25.3	25.1	95	0.8	10	100	90-110	< 0.5
Cobalt mg/L	1.000	102	85-115	1.00	22A56725q	< 0.005	0.989	99	75-125	0.989	0.998	100	0.9	10	102	90-110	< 0.005
	1.000	103	85-115	1.00	22A56724q	< 0.005	0.991	99	75-125	0.991	0.996	100	0.5	10	103	90-110	< 0.005
	1.000	104	85-115	1.00	a56564qc	< 0.005	0.995	100	75-125	0.995	1.000	100	0.5	10	102	90-110	< 0.005
	1.000	102	85-115	1.00	22A56714q	< 0.005	0.999	100	75-125	0.999	1.000	100	0.1	10	-	-	< 0.005
Fluoride mg/L	-	-	-	1.00	22-A56728	0.250	1.32	107	75-125	1.32	1.31	106	0.8	10	103	90-110	< 0.020
	-	-	-	1.00	22-A56733	0.200	1.26	106	75-125	1.26	1.27	107	0.8	10	103	90-110	< 0.020
Lead ug/L	25.0	99	85-115	25.0	22A56722q	< 0.5	25.4	102	75-125	25.4	25.8	103	1.6	10	102	90-110	< 0.5
	25.0	99	85-115	25.0	22A56733q	0.55	26.1	102	75-125	26.1	26.7	105	2.3	10	100	90-110	< 0.5
Lithium mg/L	1.000	98	85-115	1.00	22-A56731	0.026	1.000	97	75-125	1.000	1.020	99	2.0	10	99	90-110	< 0.02
	1.000	98	85-115	1.00	22-A56724	0.021	1.000	98	75-125	1.000	1.010	99	1.0	10	98	90-110	< 0.02
	1.000	98	85-115	1.00	22-A56714qc	0.033	1.030	100	75-125	1.030	1.030	100	0.0	10	99	90-110	< 0.02



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Page: 2 of 2

**Quality Control Report**

Lab IDs: 22-A56722 to 22-A56733

Project: HOOT LAKE CCR

Work Order: 202231-0547

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Mercury ug/L	- -	- -	- -	0.10 0.10	22-A56731 22-A56789	0.015 < 0.005	0.114 0.110	99 110	63-111 63-111	0.114 0.110	0.112 0.108	97 108	1.8 1.8	18 18	95 99	76-113 76-113	< 0.005 < 0.005
Molybdenum ug/L	25.0 25.0	97 97	85-115 85-115	25.0 25.0	22A56722q 22A56733q	1.74 2.54	26.1 27.8	97 101	75-125 75-125	26.1 27.8	26.9 28.2	101 103	3.0 1.4	10 10	92 100	90-110 90-110	< 0.5 < 0.5
Selenium ug/L	25.0 25.0	104 104	85-115 85-115	25.0 25.0	22A56722q 22A56733q	3.53 1.31	31.0 28.7	110 110	75-125 75-125	31.0 28.7	31.6 27.8	112 106	1.9 3.2	10 10	102 100	90-110 90-110	< 0.5 < 0.5
Thallium ug/L	5.00 5.00	98 98	85-115 85-115	5.00 5.00	22A56722q 22A56733q	< 0.1 < 0.1	5.11 5.22	102 104	75-125 75-125	5.11 5.22	5.30 5.29	106 106	3.7 1.3	10 10	102 100	90-110 90-110	< 0.1 < 0.1

Approved by: \_\_\_\_\_





# Minnesota Valley Testing Laboratories

1126 North Front Street

New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

## Field Service Chain of Custody Record

This is an exact copy of  
the original document

By AK Date 17 Nov 22  
pages 1-17

<b>Project Name:</b> Otter Tail Power Co. Hoot Lake Plant		<b>Project Type:</b> CCR	<b>Name of Samplers:</b> JH, MS, DS
<b>Report To:</b> Otter Tail Power Company		<b>Carbon Copy:</b> BarrDM@barr.com	<b>Quote Number:</b>
<b>Attn:</b> Paul Vukonich		<b>Attn:</b>	<b>Work Order Number:</b> 31-547
<b>Address:</b> P.O. Box 496 Fergus Falls, MN 56038-0496		<b>Address:</b>	<b>Lab Numbers:</b>
<b>Phone:</b> 218-739-8349			

Phone: 218-739-8349

Sample Information							Bottle Type										Analysis		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 none	1000 HNO3	500 HNO3	Filter? Y or N	500 HNO3	Filter? Y or N	500H2SO4	1000 HNO3	500 NaOH	Other: 150 H2SO4	Other: 150 HNO3	Analysis Required
34	S2A		17 Nov 22	NO Sample	GW						N								See Attached
A5622	S3AR			1333	GW		1		1	N									
23	S51			1200	GW		1		1	N									
24	S52			1245	GW		1		1	N									
25	S10R			1258	GW		1		1	N									
26	S13			1137	GW		1		1	N									
27	S14R			1215	GW		1		1	N									
28	S6			1137	GW		1		1	N									
29	S11			1211	GW		1		1	N									
30	M1			1310	GW		1		1	N									
31	S1			1307	GW		1		1	N									

Comments: CCR wells

16 Nov 22

Samples Relinquished By: <u>AK</u>			Samples Received By: <u>A. Leeder</u>		
Date: <u>17 Nov 22</u>	Time: <u>1808</u>	Temp: <u>1.3 PM 78.5</u>	Date: <u>17 Nov 22</u>	Time: <u>1808</u>	Temp: <u>1.3 C</u>
Samples Relinquished into: <u>Fridge</u> Log in Cart Other:					
Samples Relinquished By:			Samples Received By:		
Date:	Time:	Temp:	Date:	Time:	Temp:
Delivery: <u>Samplers</u>	Other:		Seal Number(s) - If Used		
Transport: <u>Ambient</u>	<u>Ice</u>	Other:	Seals Intact? Yes No		

# Minnesota Valley Testing Laboratories

1126 North Front Street

New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

## Field Service Chain of Custody Record

<b>Project Name:</b> Otter Tail Power Co. Hoot Lake Plant	<b>Project Type:</b> CCR	<b>Name of Samplers:</b> JH, MS, DS
<b>Report To:</b> Otter Tail Power Company	<b>Carbon Copy:</b> BarrDM@barr.com	<b>Quote Number:</b>
<b>Attn:</b> Paul Vukonich	<b>Attn:</b>	<b>Work Order Number:</b>
<b>Address:</b> P.O. Box 496 Fergus Falls, MN 56038-0496	<b>Address:</b>	<b>Lab Numbers:</b>
<b>Phone:</b> 218-739-8349		

Phone: 216-759-6349			Bottle Type										Analysis						
Sample Information																	Analysis		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 none	1000 HNO3	500 HNO3	Filter? Y or N	500 HNO3	Filter? Y or N	500H2SO4	1000 HNO3	500 NaOH	Other: 150 H2SO4	Other: 150 HNO3	Analysis Required
32	M-3		17 Nov 22	1330	GW		1		1	N									See Attached
33	S-3		17 Nov 22	1327	GW		1		1	N									

Comments: CCR wells

Rush: R. 226/228 (250 mL Plastic Pacer)

Samples Relinquished By: <i>[Signature]</i>			Samples Received By: <i>[Signature]</i>		
Date: 17 Nov 22	Time: 1809	Temp: 1.37	Date: 17 Nov 22	Time: 1808	Temp: 1.36
Samples Relinquished into: <u>Fridge</u> Log in Cart Other:					
Samples Relinquished By:			Samples Received By:		
Date:	Time:	Temp:	Date:	Time:	Temp:
Delivery: <u>Samplers</u>	Other:		Seal Number(s) - If Used		
Transport: <u>Ambient</u>	Other: <u>Ice</u>		Seals Intact?	Yes	No

New 10-24-22  
Sampling on 11-17-22

# Hoot Lake Site CCR Sampling - 2022 Assessment

Well	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (gal/minute)	Goes Dry?
S2A	CCR 4	79.63	2	1273.776	Bladder	Yes	< 0.25	No
S3AR	CCR 4	78.42	2	1271.562	Bladder	Yes	< 0.25	No
S51	CCR 4	55.6	2	1286.904	Bladder	Yes	< 0.25	No
S52	CCR 4	88.3	2	1286.623	Bladder	Yes	< 0.25	No
S10R	CCR 4	57.00	2	1281.47	Bladder	Yes	< 0.25	No
S13	CCR 4	90.19	2	1296.423	Bladder	Yes	< 0.25	No
S14R	CCR 4	70.86	2	1280.61	Bladder	Yes	< 0.25	Yes
S6	CCR 4	58.9	2	1263.63	Grundfos	No	0.15	No
S11	CCR 4	75.97	2	1279.076	Grundfos	No	0.25	No
M1	CCR 4	115	4	1282.06	N/A	Yes	N/A	N/A
S1	CCR 4	74.00	2	1273.496	Grundfos	No	N/A	No
M-3	CCR 4	110.00	4	1275.826	N/A	Yes	N/A	N/A
S-3	CCR 4	22.67	2	1276.666	Whale	No	0.25	No

whale - good

**Note: CCR samples must be on their own COC.**

Total Recoverable Metals! Groundwater samples shall not be field filtered prior to analysis.

CCR - use whale pump (No BAILERS)

1000 NONE  
250 NONE  
500 HAD 3

## CCR - Appendix IV - Assessment Monitoring

### **Total Concentration Parameters**

Antimony	SW6020A
Arsenic	SW602A
Barium	SW6010C
Beryllium	SW6020A
Cadmium	SW6020A
Chromium, Total	SW6020A
Cobalt	SW6010C
Fluoride	EPA 300
Lead	SW6020A
Lithium	SW6010C
Mercury	EPA 245.7
Molybdenum	SW6020A
Selenium	SW6020A
Thallium	SW6020A
Radium 226 + 228	250 mL plastic

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

JH

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 674671

Sample ID: S-3A-R

## Well Condition

Well Locked? ☒ Yes No

Well Labeled? ☒ Yes No

Casing Straight? ☒ Yes No

Protective Posts? ☒ Yes No

State ID Tag? ☒ Yes No

Grout Seal Intact? Yes ☒ No

Repairs Necessary:

## Well Information

Well Depth: 78.40

Constructed Depth: 78.42

Casing Diameter: 2"

Water Level Before Purge: 68.70

Well Volume: 1.58 Gallons

Well Casing Elevation: 1271.562

Static Water Elevation: 1202.862

Previous Static:

Water Level After Sample: 70.79

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22 Wind: NW-18 Sky: Cloudy

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes No

Pumping Rate: 0.25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1312 am ☒ pm

Time Purged Dry: -

Time of Sampling: 1333 am ☒ pm

Duplicate Sample? Yes ☒ No ID: -

Sample EH: 18.0

Sample Appearance: General: Clear Color: None Phase: None Odor: Sulfurous

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1319	7.12	989	8.27	1.22	0.0	1.25	1	
1324	7.07	985	8.30	1.38	0.0	3.5	2	
1333	7.09	983	8.36	1.38	0.0	5.25	3	
							4	
							5	

Stabilized? ☒ Yes No

Amount Water Removed: 5.25 Gallons

Comments:

Exceptions to Protocol:

Both

052

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 814830

Sample ID: S-51

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☐ Yes ☒ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 55.60

Constructed Depth: 55.60

Casing Diameter: 2"

Water Level Before Purge: 48.95

Well Volume: 1.08 Gallons

Well Casing Elevation: 1286.904

Static Water Elevation: 1037.95

Previous Static:

Water Level After Sample: 48.75

Measurement Method: ☒ Elec. WLL ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 23 Wind: NW-20 Sky: cloudy

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 25 gpm

Well Purged Dry? ☐ Yes ☒ No

Time Pump Began: 1148 am

Time Purged Dry:

Time of Sampling: 1200 am

Duplicate Sample? ☐ Yes ☒ No ID: -

Sample EH: -18.7

Sample Appearance: General: clear Color: none Phase: 4-sec Odor: surface

(4) Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1152	7.38	665	7.28	3.01	19.1	1	1	
1156	7.34	666	7.29	3.21	23.4	2	2	
1200	7.33	668	7.25	3.21	23.8	3	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3 Gallons

Comments:

Exceptions to Protocol:

038

Both

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

ms

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID:

Sample ID: S-52

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 88.30

Constructed Depth: 88.30

Casing Diameter: 2"

Water Level Before Purge: 70.80

Well Volume: 2.85 Gallons

Well Casing Elevation: 1286.623

Static Water Elevation: 1215.82

Previous Static:

Water Level After Sample: 70.91

Measurement Method: Elec. WLL Steel Tape

## Sampling Information

Weather Conditions: Temp: 23 Wind: NW-23 Sky: cloudy

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1209 am / pm

Time Purged Dry?

Time of Sampling: 1245 am / pm

Duplicate Sample? Yes ☒ No ID: —

Sample EH: -23.9

Sample Appearance: General: Clear Color: none Phase: L + sed Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1221	7.20	694	7.59	2.16	3.9	3	1	
1233	7.20	694	7.59	1.87	2.7	6	2	
1245	7.20	694	7.60	2.08	2.7	9	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 9 Gallons

Comments:

Exceptions to Protocol:

Both

PFA X 3

035

041

039

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

JH

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 806341

Sample ID: S-10R

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 80.62

Constructed Depth: 57.00

Casing Diameter: 2"

Water Level Before Purge: 72.09

Well Volume: 1.39 Gallons

Well Casing Elevation: 1281.47

Static Water Elevation: 1209.38

Previous Static:

Water Level After Sample: Below pump

Measurement Method: Elec. Well Steel Tape

## Sampling Information

Weather Conditions: Temp: 20 Wind: NW-18 Sky: Cloudy

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 1.25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 12:40 am ☒ pm

Time Purged Dry?

Time of Sampling: 12:58 am ☒ pm

Duplicate Sample? Yes ☒ No ID:

Sample EH: 29.6

Sample Appearance: General: S. Cloudy Color: None Phase: Lt. Sediment Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1246	7.04	868	8.42	1.90	19.2	1.5	1	
1252	7.06	870	8.48	1.81	19.7	3.0	2	
1258	7.06	870	8.49	1.77	19.0	4.5	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 4.5 Gallons

Comments:

Exceptions to Protocol:

049

Both



# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

JH

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 632810

Sample ID: S-13

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 90.27

Constructed Depth: 90.19

Casing Diameter: 2"

Water Level Before Purge: 85.55

Well Volume: 12.76 Gallons

Well Casing Elevation: 1296.423

Static Water Elevation: 1210.873

Previous Static: -

Water Level After Sample: 85.76

Measurement Method: ☒ Elec. WLL ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22 Wind: NW-17 Sky: Snow

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 11:25 am / pm

Time Purged Dry?

Time of Sampling: 11:37 am / pm

Duplicate Sample? Yes ☒ No ID: -

Sample EH: 154.4

Sample Appearance: General: Clear Color: None Phase: None Odor: None

4 Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1129	7.34	895	8.56	4.77	7.9	1	1	
1133	7.32	895	8.51	4.70	7.6	2	2	
1137	7.30	898	8.46	4.56	6.4	3	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3 Gallons

Comments:

Exceptions to Protocol:

Both

051

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

JH

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 806342

Sample ID: S-14R

## Well Condition

Well Locked? ☒ Yes No  
Well Labeled? ☒ Yes No  
Casing Straight? ☒ Yes No

Protective Posts? ☒ Yes No  
State ID Tag? ☒ Yes No  
Grout Seal Intact? ☒ Yes No

Repairs Necessary:

## Well Information

Well Depth: 87.11

Constructed Depth: 70.86

Casing Diameter: 2"

Water Level Before Purge: 79.91

Well Volume: 1.17 Gallons

Well Casing Elevation: 1280.61

Static Water Elevation: 1200.70

Previous Static: —

Water Level After Sample: 81.01

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22 Wind: NW 17 Sky: Cloudy

Sampling Method: Grundfos ☒ Sladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 0.55 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 12:00 am ☒ pm

Time Purged Dry?

Time of Sampling: 12:15 am ☒ pm

Duplicate Sample? Yes ☒ No ID: —

Sample EH: 47.3

Sample Appearance: General: Clear Color: NCM Phase: NCM Odor: NCM

S Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1205	7.04	898	7.88	1.02	0.0	1.25	1	
1210	7.04	899	7.91	0.85	0.0	2.50	2	
1215	7.02	886	7.94	0.82	0.0	3.75	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3.75 Gallons

Comments:

Exceptions to Protocol:

Both

033

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 444353

Sample ID: S-6

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 58.59

Well Casing Elevation: 1263.63

Constructed Depth: 58.90

Static Water Elevation: —

Casing Diameter: 2"

Previous Static: 1210.13

Water Level Before Purge: 53.50

Water Level After Sample: 53.50

Well Volume: 0.83 Gallons

Measurement Method: ☒ Elec. W/L ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 23 Wind: NW20 Sky: cloudy

Sampling Method: Grundfos Bladder SS/T Disp. Bailer ☒ Whale ☐ Grab ☐ Other:

Dedicated Equipment: Yes ☐ No ☒

Pumping Rate: 25 gpm

Well Purged Dry? Yes ☐ No ☒

Time Pump Began: 1125 am / pm

Time Purged Dry? —

Time of Sampling: 1137 am / pm

Duplicate Sample? Yes ☐ No ☒ ID: —

Sample EH: 262.3

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1129	7.01	629	8.85	2.63	7.0	1	1	
1133	7.04	629	8.85	2.59	6.5	2	2	
1137	7.08	629	8.84	2.58	5.6	3	3	
							4	
							5	

Stabilized? Yes ☒ No ☐

Amount Water Removed: 3 Gallons

Comments:

Exceptions to Protocol:

Both

042

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

DS

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 632809

Sample ID: S-11

## Well Condition

Well Locked? Yes No  
Well Labeled? Yes No  
Casing Straight? Yes No

Protective Posts? Yes No  
State ID Tag? Yes No  
Grout Seal Intact? Yes No

Repairs Necessary:

## Well Information

Well Depth: 75.91  
Constructed Depth: 75.97  
Casing Diameter: 2"  
Water Level Before Purge: 63.72  
Well Volume: 199 Gallons

Well Casing Elevation: 1279.076  
Static Water Elevation: 1215.36  
Previous Static: 1216.32  
Water Level After Sample: 63.72  
Measurement Method: Elec. W/L Steel Tape

## Sampling Information

Weather Conditions: Temp: 21° Wind: WNW @ 18 Sky: Mostly Cloudy  
Sampling Method: Grundfos Bladder SS/T Disp. Bailer Whale Grab Other:  
Dedicated Equipment: Yes (No)  
Well Purged Dry? Yes (No)  
Time Purged Dry?  
Duplicate Sample? Yes (No) ID: -  
Sample Appearance: General: 5/Cloudy Color: Gray Phase: lt Sed Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1155</u>	<u>7.41</u>	<u>940</u>	<u>6.75</u>	<u>4.90</u>	<u>74.8</u>	<u>2</u>	<u>1</u>	
<u>1203</u>	<u>7.40</u>	<u>940</u>	<u>6.76</u>	<u>4.91</u>	<u>74.1</u>	<u>4</u>	<u>2</u>	
<u>1211</u>	<u>7.41</u>	<u>942</u>	<u>6.76</u>	<u>4.93</u>	<u>73.4</u>	<u>6</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? Yes No

Amount Water Removed: 6 Gallons

Comments:

PFA Field Blank # 046

Exceptions to Protocol:

Both 047

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

DS

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date:

17 Nov 22

Unique Station ID: 115737

Sample ID: M-1

## Well Condition

Well Locked? Yes ☒ No ☐

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? Yes ☒ No ☐

State ID Tag? Yes ☒ No ☐

Grout Seal Intact? Yes ☒ No ☐

Repairs Necessary:

## Well Information

Well Depth: 102.80

Constructed Depth: 115.00

Casing Diameter: 4"

Water Level Before Purge: 62.13

Well Volume: 26.58 Gallons

Well Casing Elevation: 1282.026

Static Water Elevation: 1219.90

Previous Static: 1221.01

Water Level After Sample: 81.19

Measurement Method: Elec. WLI ☒ Steel Tape

## Sampling Information

Weather Conditions: Temp: 21° Wind: WNW @ 18 Sky: Mostly Cloudy

Sampling Method: Grundfos Bladder SS/T Disp. Bailer Whale ☒ Grab ☐ Other: submersible

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 5.6 gpm

Well Purged Dry? Yes ☒ No ☐

Time Pump Began: — am / pm

Time Purged Dry? —

Time of Sampling: 1310 am / ☒ pm

Duplicate Sample? Yes ☒ No ☐

Sample EH: -123.6

Sample Appearance: General: Cloudy Color: Tan Phase: Lt Seal Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1310	7.61	1071	6.62	5.49	86.8	—	1	
							2	
							3	
							4	
							5	

Stabilized? Yes ☒ No ☐

Amount Water Removed: — Gallons

Comments:

Both

Exceptions to Protocol:

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

ms

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 444351

Sample ID: S-1

## Well Condition

Well Locked? ☒ Yes ☐ No  
Well Labeled? ☒ Yes ☐ No  
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No  
State ID Tag? ☒ Yes ☐ No  
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 73.82

Well Casing Elevation: 1273.496

Constructed Depth: 74.00

Static Water Elevation: 1210.64

Casing Diameter: 2"

Previous Static:

Water Level Before Purge: 62.85

Water Level After Sample: 68.80

Well Volume: 1.78 Gallons

Measurement Method: ☒ Elec. W/L ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22 Wind: NW-20 Sky: cldy

Sampling Method: Grundfos Bladder SS/T Disp. Bailer ☒ Whale ☐ Grab ☐ Other:

Dedicated Equipment: Yes ☐ No ☒

Pumping Rate: .25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1255 am / ☒ pm

Time Purged Dry: 1302

Time of Sampling: 1307 am / ☒ pm

Duplicate Sample? Yes ☐ No ☒

Sample EH: 39.1

Sample Appearance: General: cldy Color: tan Phase: L + Sed Odor: Sulfurous

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1302	7.30	540	6.90	11.01	203.3	1.7	1	
1307	7.36	579	6.47	10.84	188.3	—	2	recharge
							3	
							4	
							5	

Stabilized? Yes ☐ No ☒

Amount Water Removed: 1.7 Gallons

Comments:

Exceptions to Protocol:

036

Both



# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

MS

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 12/10/22

Unique Station ID: 151505

Sample ID: M-3

## Well Condition

Well Locked? Yes ☒ No

Well Labeled? ☒ Yes No

Casing Straight? ☒ Yes No

Protective Posts? Yes ☒ No

State ID Tag? Yes ☒ No

Grout Seal Intact? Yes ☒ No

Repairs Necessary:

## Well Information

Well Depth: 110.00

Constructed Depth: 110.00

Casing Diameter: 4"

Water Level Before Purge: NA

Well Volume: Gallons

Well Casing Elevation: 1275.826

Static Water Elevation: NA

Previous Static: —

Water Level After Sample: NA

Measurement Method: ☒ Elec. WLL ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 23 Wind: NW 22 Sky: cloudy

Sampling Method: Grundfos Bladder SS/T Disp. Bailer Whale Grab ☒ Other: Submersible

Dedicated Equipment? ☒ Yes No

Pumping Rate: 5.0 gpm

Well Purged Dry? ☒ Yes No

Time Pump Began: — am / pm

Time Purged Dry? —

Time of Sampling: 1330 am ☒ pm

Duplicate Sample? Yes No ID: —

Sample EH: -163.7

Sample Appearance: General: Clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1330	7.97	624	7.52	2.55	5.4	—	1	
							2	
							3	
							4	
							5	

Stabilized? Yes ☒ No

Amount Water Removed: — Gallons

Comments:

~~Water Level Only~~

Both

040

Exceptions to Protocol:

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

ms

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 22

Unique Station ID: 432728

Sample ID: S-3

## Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

## Well Information

Well Depth: 22.59

Constructed Depth: 22.67

Casing Diameter: 2"

Water Level Before Purge: 1230

Well Volume: 1.67 Gallons

Well Casing Elevation: 1276.666

Static Water Elevation: 1264.36

Previous Static:

Water Level After Sample: 1245

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22 Wind: nw 25 Sky: cldy

Sampling Method: Grundfos Bladder SS/T Disp. Bailor ☒ Whale ☐ Grab ☐ Other:

Dedicated Equipment: Yes ☒ No

Pumping Rate: 1.25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1315 am / pm

Time Purged Dry? 1322

Time of Sampling: 1327 am / pm

Duplicate Sample? Yes ☒ No ID: —

Sample EH: 60.7

Sample Appearance: General: sl. cl dy Color: tan Phase: LTSD Odor: None

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1322</u>	<u>7.29</u>	<u>752</u>	<u>9.40</u>	<u>2.59</u>	<u>55.1</u>	<u>1.75</u>	<u>1</u>	
<u>1327</u>	<u>7.28</u>	<u>735</u>	<u>9.67</u>	<u>2.79</u>	<u>19.6</u>	<u>—</u>	<u>2</u>	<u>recharge</u>
							<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? Yes ☒ No

Amount Water Removed: 1.75 Gallons

Comments:

Exceptions to Protocol:

CCR only

# Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

## Groundwater Assessment

Sampling Personnel:

JH

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 17 Nov 23

Unique Station ID: 444350

Sample ID: S-2A

## Well Condition

Well Locked? Yes ☒ No

Well Labeled? ☒ Yes No

Casing Straight? ☒ Yes No

Repairs Necessary:

Protective Posts? ☒ Yes No

State ID Tag? Yes ☒ No

Grout Seal Intact? ☒ Yes No

## Well Information

Well Depth: 79.62

Constructed Depth: 79.63

Casing Diameter: 2"

Water Level Before Purge: 77.74

Well Volume: 0.30 Gallons

Well Casing Elevation: 1273.776

Static Water Elevation: 1196.036

Previous Static:

Water Level After Sample:

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

## Sampling Information

Weather Conditions: Temp: 22

Wind: NW-17

Sky: cloudy

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes No

Well Purged Dry? Yes No

Time Purged Dry:

Duplicate Sample? Yes No ID:

Sample Appearance: General:

Color:

Phase:

Odor:

Pumping Rate: gpm

Time Pump Began: am / pm

Time of Sampling: am / pm

Sample EH:

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
							1	
							2	
							3	
							4	
							5	

Stabilized? Yes No

Amount Water Removed:

Gallons

Comments:

Exceptions to Protocol:

- No sample  
- Insufficient volume to sample both  
- 11:50

## Appendix B

### Groundwater Flow Calculations

## Hoot Lake Ash Disposal Facility Groundwater Velocity Calculation

<b>Sampling Date</b>	5/3/2022
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### Upgradient (S-52)

<b>Top of Casing Elevation</b>	1286.62	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	70.45	ft below TOC	
<b>Water Level Elevation</b>	1216.17	ft amsl	

### Downgradient (S-2A)

<b>Top of Casing Elevation</b>	1272.90	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	75.45	ft below TOC	
<b>Water Level Elevation</b>	1197.45	ft amsl	

<b>horizontal hydraulic conductivity (Kh)</b>	2.30E-03	cm/s	Groundwater Monitoring System Report (Barr, 2016)
	6.52E+00	ft/day	
<b>porosity (n)</b>	0.25		Groundwater Monitoring System Report (Barr, 2016)
<b>horizontal distance</b>	1131	ft	
<b>WL elevation difference</b>	18.72	ft	
<b>gradient (i)</b>	0.017	ft/ft	
<b>linear velocity (V)</b>	0.4316	ft/day	
<b>V</b>	157.7	ft/yr	

## Hoot Lake Ash Disposal Facility Groundwater Velocity Calculation

<b>Sampling Date</b>	6/23/2022
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### Upgradient (S-52)

<b>Top of Casing Elevation</b>	1286.62	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	70.16	ft below TOC	
<b>Water Level Elevation</b>	1216.46	ft amsl	

### Downgradient (S-2A)

<b>Top of Casing Elevation</b>	1272.90	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	75.44	ft below TOC	
<b>Water Level Elevation</b>	1197.46	ft amsl	

<b>horizontal hydraulic conductivity (Kh)</b>	2.30E-03	cm/s	Groundwater Monitoring System Report (Barr, 2016)
	6.52E+00	ft/day	
<b>porosity (n)</b>	0.25		Groundwater Monitoring System Report (Barr, 2016)
<b>horizontal distance</b>	1131	ft	
<b>WL elevation difference</b>	19.00	ft	
<b>gradient (i)</b>	0.017	ft/ft	
<b>linear velocity (V)</b>	0.4381	ft/day	
<b>V</b>	160.0	ft/yr	



## Hoot Lake Ash Disposal Facility Groundwater Velocity Calculation

<b>Sampling Date</b>	11/17/2022
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### Upgradient (S-52)

<b>Top of Casing Elevation</b>	1286.62	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	70.80	ft below TOC	
<b>Water Level Elevation</b>	1215.82	ft amsl	

### Downgradient (S-2A)

<b>Top of Casing Elevation</b>	1272.90	ft amsl	Groundwater Monitoring System Report (Barr, 2016)
<b>Depth to Water</b>	77.74	ft below TOC	
<b>Water Level Elevation</b>	1195.16	ft amsl	

<b>horizontal hydraulic conductivity (Kh)</b>	2.30E-03	cm/s	Groundwater Monitoring System Report (Barr, 2016)
	6.52E+00	ft/day	
<b>porosity (n)</b>	0.25		Groundwater Monitoring System Report (Barr, 2016)
<b>horizontal distance</b>	1131	ft	
<b>WL elevation difference</b>	20.66	ft	
<b>gradient (i)</b>	0.018	ft/ft	
<b>linear velocity (V)</b>	0.4764	ft/day	
<b>V</b>	174.0	ft/yr	