2017 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Hoot Lake Plant Fergus Falls, Minnesota

Prepared for Otter Tail Power Company

January 2018



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Acronyms

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

1.0 Introduction

Otter Tail Power Company (OTP) operates Hoot Lake Plant, a coal-fired generation unit in Fergus Falls, Minnesota (Figure 1). Coal combustion residuals (CCR) from plant operations are placed in an on-site landfill, referred to as the Ash Landfill. The Ash Landfill is required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261 Disposal of Coal Combustion Residuals From Electric Utilities) for existing CCR landfills. The vicinity of the CCR unit (Ash Landfill) is shown on Figure 1.

This 2017 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Ash Landfill at the Hoot Lake Plant (Site).

1.1 Purpose

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

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

1.2 Status of the Groundwater Monitoring and Corrective Action Program

Baseline monitoring was completed prior to October 17, 2017. The evaluation of groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III began on October 17, 2017.

1.3 CCR Rule Requirements

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

Table 1 CCR Rule Requirements

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

2.0 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR unit for the period starting with the effective date of the Rule through the end of 2017. The groundwater monitoring system is described in Section 2.1, the monitoring and analytical results are described in Section 2.2, key actions completed and problems encountered are described in Section 2.3, and key activities planned for 2018 are described in Section 2.4.

2.1 Groundwater Monitoring System

2.1.1 Documentation

Figure 1 shows an aerial image of the CCR unit and all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, which are part of the groundwater monitoring program, as required by §257.90(e)(1). Further details on the monitoring system and the CCR unit monitoring wells are included in the *Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant* (Barr, 2016).

2.1.2 Changes to Monitoring System

The CCR groundwater monitoring system was unchanged in 2017.

2.2 Monitoring and Analytical Results

CCR Rule provisions §257.90(e)(3) and §257.94(b) require collection of eight independent samples to establish background water quality for the detection monitoring program. A total of 56 (seven monitoring wells and eight sampling events) groundwater samples were collected and analyzed for the constituents listed in Appendices III and IV (Part 257) before October 17, 2017. Dates of sampling are reported on the field data sheets and analytical laboratory reports in Appendix A.

2.3 Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program through 2017:

- Baseline groundwater samples were collected and analyzed for the constituents listed in Appendices III and IV from the CCR Rule.
- A statistical method was selected for evaluating groundwater monitoring data by a qualified professional engineer in 2017.

No problems were encountered during the report period.

2.4 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2018:

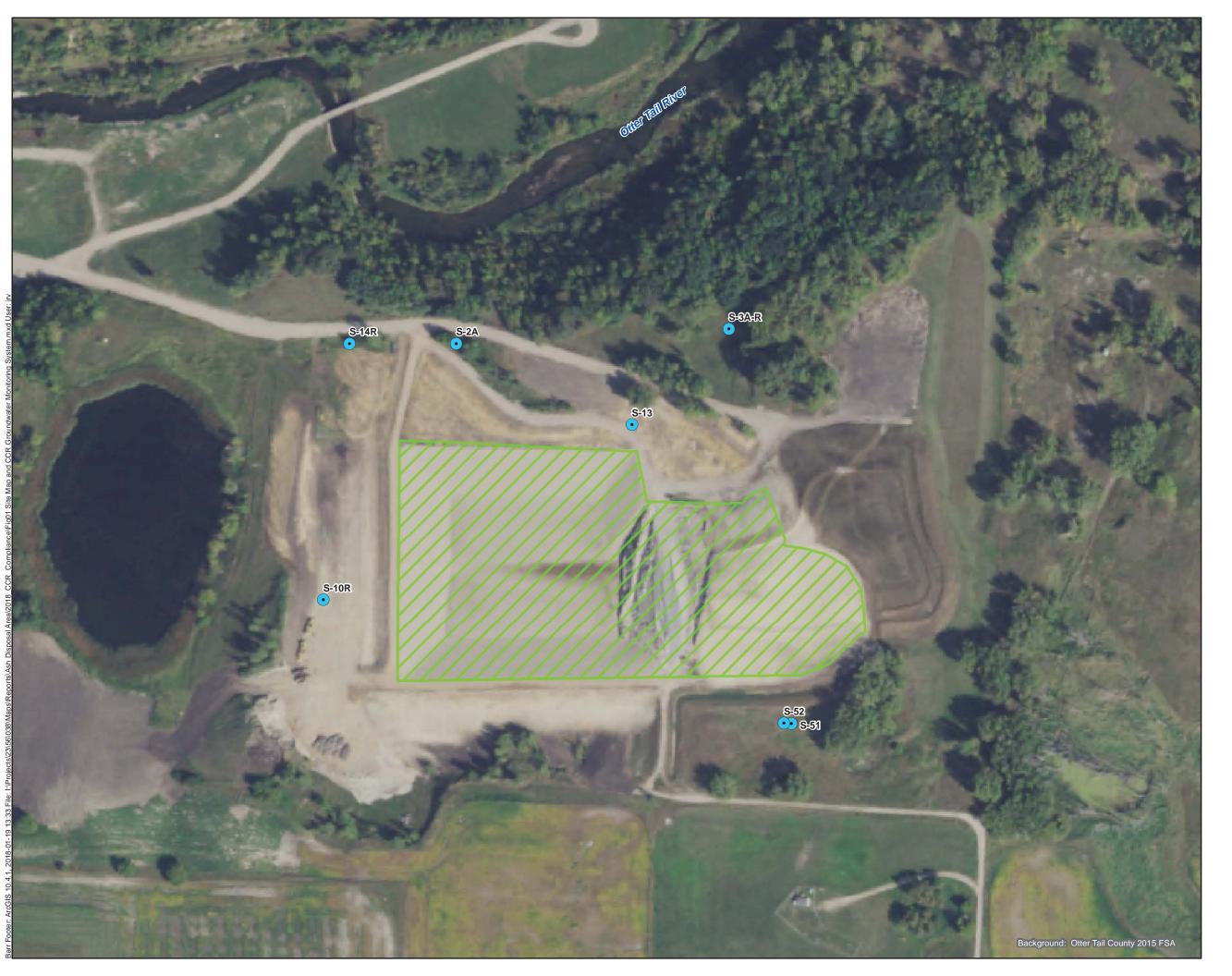
- Evaluate analytical results from the 2018 semiannual detection monitoring events for statistically significant increases (SSIs) according to the Groundwater Statistical Analysis Plan (McCain, 2017).
- Continue the groundwater monitoring program in accordance with the CCR rule.

3.0 References

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

Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan, Ash Landfill – Hoot Lake Plant, Fergus Falls, Minnesota. Prepared for Otter Tail Power Company.

Figures





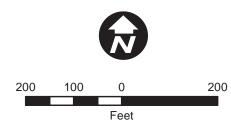


Figure 1

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

Appendices

Appendix A

Laboratory Reports and Field Sheets



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



Page: 1

FINAL REPORT COMPLETION DATE: 13 Oct 16 0 X

Date Reported: 7 Oct 2016

T J NEWKIRK
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Work Order #: 31-0470 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Field Service Manager/Date Reviewed

Chemistry Lab Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



Page:

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T J NEWKIRK OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S2A

Report Date: 7 Oct 2016 Lab Number: 16-A47617 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 13 Sep 2016 12:17
Sampled By: MVTL FIELD PERSONNEL

Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

•	As Receiv	red	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 12:17	BMW
Water Elevation	1197.39		NA	NA	13 Sep 16 12:17	BMW
Temperature - Field	11.36	deq. C	NA	170.1	13 Sep 16 12:17	BMW
Specific Conductance, Fld	1002	umhos/cm	1	120.1	13 Sep 16 12:17	BMW
pH, Field	6.94	units	1.00	I-1586-85	13 Sep 16 12:17	BMW
pH PH	* 7.2	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	150.4	units	NA	SM 2580B	13 Sep 16 12:17	BMW
Dissolved Oxygen, Field	1.22	mg/L	0.10	SM 4500-O G	13 Sep 16 12:17	BMW
Turbidity, Field	9.9	NTU	0.1	180.1	13 Sep 16 12:17	BMW
Radium 226	See Attac				6 Oct 16 6:11	ABL
Radium 228	See Attac			EPA M9320	6 Oct 16 6:11	ABL
Sulfate	174 @	mq/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	< 3	mq/L	3	SM 4500 C1 E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	621	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	149.0	mq/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.036	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.064	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Beryllium	< 0.005	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	< 0.01	mq/L	0.01	SW6010C	22 Sep 16 11:46	RMV
CITTOMECAM	See Narra				_	
Cobalt	< 0.005	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
CODUIT	See Narra					
Molybdenum	< 0.015	mq/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Boron	0.218	mq/L	0.100	SW6010C	22 Sep 16 11:46	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Selenium	< 1 @	uq/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.190	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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T J NEWKIRK
OTTER TAIL POWER CO
PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S3AR

Page: 3 of 9

Report Date: 7 Oct 2016 Lab Number: 16-A47618 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 13 Sep 2016 13:04 Sampled By: MVTL FIELD PERSONNEL Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 13:04	BMW
Water Elevation	1203.59		NA	NA	13 Sep 16 13:04	BMW
Temperature - Field	9.11	deg. C	NA	170.1	13 Sep 16 13:04	BMW
Specific Conductance, Fld	964	umhos/cm	1	120.1	13 Sep 16 13:04	BMW
pH, Field	6.54	units	1.00	I-1586-85	13 Sep 16 13:04	BMW
pH pH	* 7.3	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-32.5	units	NA	SM 2580B	13 Sep 16 13:04	BMW
Dissolved Oxygen, Field	1.53	mg/L	0.10	SM 4500-0 G	13 Sep 16 13:04	BMW
Turbidity, Field	< 0.1	NTU	0.1	180.1	13 Sep 16 13:04	BMW
Radium 226	See Attac				6 Oct 16 6:11	ABL
Radium 228	See Attac			EPA M9320	6 Oct 16 6:11	AEL
Sulfate	156 @	mg/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	11.6	mq/L	3.0	SM 4500 C1 E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	550	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	119.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.022	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.044	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Beryllium	< 0.003	mg/L	0.01	SW6010C	22 Sep 16 11:46	RMV
Chromium	See Narra	-	0.02		•	
g -1-1+	< 0.005	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Cobalt	See Narra		0.000	2	<u>-</u>	
No. 2 - 2 - 2 - 2	< 0.015	mq/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Molybdenum	0.221	mg/L	0.100	SW6010C	22 Sep 16 11:46	RMV
Boron	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Arsenic			0.1	SW6020A	21 Sep 16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A SW6020A	21 Sep 16 14:05	RMV
Selenium	3.32 @	ug/L		SW6020A SW6020A	21 Sep 16 14:05	RMV
Thallium	< 0.2 @	ug/L	0.1	EPA 300.0	23 Sep 16 12:44	RMB
Fluoride	0.170	mg/L	0.020	EPA 300.0	23 Sep 10 12.44	1410

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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

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

Due to concentration of other analytes

Due to concentration of other analytes

Due to sample quantity

Due to internal standard response

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



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Report Date: 7 Oct 2016 Lab Number: 16-A47619 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 13 Sep 2016 16:04 Sampled By: MVTL FIELD PERSONNEL Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

T J NEWKIRK OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S51

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Slightly	Cloudy	NA	SM 2110	13 Sep 16 16:04	BMW
Water Elevation	1237.17	-	NA	NA	13 Sep 16 16:04	PMW
Temperature - Field	8.55	deg. C	NA	170.1	13 Sep 16 16:04	BMW
Specific Conductance, Fld	877	umhos/cm	1	120.1	13 Sep 16 16:04	BMW
pH, Field	6.70	units	1.00	I-1586-85	13 Sep 16 16:04	BMW
pH pH	* 7.2	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-26.0	units	NA	SM 2580B	13 Sep 16 16:04	BMW
Dissolved Oxygen, Field	1.44	mg/L	0.10	SM 4500-0 G	13 Sep 16 16:04	BMW
Turbidity, Field	38.6	NTU	0.1	180.1	13 Sep 16 16:04	BMW
Radium 226	See Attac	hed			6 Oct 16 6:11	ABI.
Radium 228	See Attac	hed		EPA M9320	6 Oct 16 6:12	ABL
Sulfate	81.9 @	mq/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	16.8	mq/L	3.0	SM 4500 Cl E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	474	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	127.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.025	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.080	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Beryllium	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	`< 0.01	mg/L	0.01	SW6010C	22 Sep 16 11:46	RMV
OTT OTHER DATE	See Narra	tive				
Cobalt	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
002410	See Narra	tive			•	
Molybdenum	< 0.015	mg/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	22 Sep 16 11:46	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	PMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Selenium	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RWV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.220	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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:
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 concentration of other analytes
= Due to internal standard response

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



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Report Date: 7 Oct 2016
Lab Number: 16-A47620
Work Order #: 31-0470
Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 13 Sep 2016 16:43 Sampled By: MVTL FIELD PERSONNEL Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

T J NEWKIRK OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S52

•	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 16:43	BMW
Water Elevation	1216.03		NA	NA	13 Sep 16 16:43	BMW
Temperature - Field	8.53	deg. C	NA	170.1	13 Sep 16 16:43	BMW
Specific Conductance, Fld	843	umhos/cm	1	120.1	13 Sep 16 16:43	BMW
pH, Field	6.69	units	1.00	I-1586-85	13 Sep 16 15:43	BMW
pH	* 7.2	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-93.6	units	NA	SM 2580B	13 Sep 16 16:43	BWW
Dissolved Oxygen, Field	0.53	mg/L	0.10	SM 4500-0 G	13 Sep 16 16:43	BMW
Turbidity, Field	< 0.1	NTU	0.1	180.1	13 Sep 16 16:43	BMW
Radium 226	See Attac	hed			6 Oct 16 6:12	ABL
Radium 228	See Attac	hed		EPA M9320	6 Oct 16 6:12	ABL
Sulfate	75.4 @	mg/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	14.9	mg/L	3.0	SM 4500 Cl E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	456	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	112.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.021	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.113	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Bervllium	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	22 Sep 16 11:46	RMV
OHE OME AND	See Narra	tive				
Cobalt	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
002420	See Narra	tive				
Molybdenum	< 0.015	mg/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	22 Sep 16 11:46	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	1.65 @	ug/L	0.50	SW6020A	21 Sep-16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	
Selenium	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.180	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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 sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MCRO # 1013-M ND WW/DW # R-040



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



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Report Date: 7 Oct 2016 Lab Number: 16-A47621 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 13 Sep 2016 13:51
Sampled By: MVTL FIELD PERSONNEL
Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

T J NEWKIRK OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S10R

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 13:51	
Water Elevation	1209.43		NA	NA	13 Sep 16 13:51	BMW
Temperature - Field	9.31	deg. C	NA	170.1	13 Sep 16 13:51	BMW
Specific Conductance, Fld	914	umhos/cm	1	120.1	13 Sep 16 13:51	BMW
pH, Field	6.60	units	1.00	I-1586-85	13 Sep 16 13:51	BMW
рН	* 7.2	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-17.7	units	NA	SM 2580B	13 Sep 16 13:51	BMW
Dissolved Oxygen, Field	1.67	mg/L	0.10	SM 4500-0 G	13 Sep 16 13:51	BMW
Turbidity, Field	< 0.1	NTU	0.1	180.1	13 Sep 16 13:51	BMW
Radium 226	See Attac	hed			6 Oct 16 6:12	ABL
Radium 228	See Attac	hed		EPA M9320	6 Oct 16 6:12	ABL
Sulfate	128 @	mg/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	11.8	mg/L	3.0	SM 4500 Cl E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	$\mathtt{ug/L}$	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	519	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	120.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.023	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.107	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Beryllium	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	22 Sep 16 11:46	RMV
	See Narra	tive				
Cobalt	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
	See Narra	tive				
Molybdenum	< 0.015	mg/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	22 Sep 16 11:46	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	4.42 @	ug/L	0.50	SW6020A	21 Sep 16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Selenium	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.160	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs .1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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

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



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T J NEWKIRK OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S13

Page: 7 of 9

Report Date: 7 Oct 2016 Lab Number: 16-A47622 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 13 Sep 2016 15:10 Sampled By: MVTL FIELD PERSONNEL Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
	Kesuit		ТА	Reference	ci, 200	111111111111111111111111111111111111111
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 15:10	BMW
Water Elevation	1210.94		NA	NA	13 Sep 16 15:10	BMW
Temperature - Field	9.98	deq. C	NA	170.1	13 Sep 16 15:10	BMW
Specific Conductance, Fld	866	umhos/cm	1	120.1	13 Sep 16 15:10	BMW
pH, Field	6.82	units	1.00	I-1586-85	13 Sep 16 15:10	BMW
pH pH	* 7.3	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-80.5	units	NA	SM 2580B	13 Sep 16 15:10	BMW
Dissolved Oxygen, Field	1.07	mq/L	0.10	SM 4500-0 G	13 Sep 16 15:10	BMW
Turbidity, Field	< 0.1	NTU	0.1	180.1	13 Sep 16 15:10	BMW
Radium 226	See Attac	hed			6 Oct 16 6:12	ABL
Radium 228	See Attac			EPA M9320	6 Oct 16 6:13	ABL
Sulfate	104 @	mg/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	8.4	mq/L	3.0	SM 4500 Cl E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	uq/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	476	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	111.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	RMV
Lithium	0.023	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMB
Barium	0.059	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Bervllium	< 0.005	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	< 0.01	mq/L	0.01	SW6010C	22 Sep 16 11:46	RMV
CITE OILL CITE	See Narra	-				
Cobalt	< 0.005	mq/L	0.005	SW6010C	22 Sep 16 11:46	RMV
OODGEE	See Narra	tive				
Molybdenum	< 0.015	mg/L	0.015	SW6010C	22 Sep 16 11:46	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	22 Sep 16 11:46	RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Selenium	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.200	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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Report Date: 7 Oct 2016 Lab Number: 16-A47623 Work Order #: 31-0470 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 13 Sep 2016 14:29
Sampled By: MVTL FIELD PERSONNEL
Date Received: 14 Sep 2016 11:47

PO #: 48679

Temp at Receipt: 0.1C

T J NEWKIRK
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S14R

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					16 Sep 16	JMS
Water Digestions					17 Sep 16	JMS
Appearance, Field	Clear		NA	SM 2110	13 Sep 16 14:29	BM7
Water Elevation	1201.24		NA	NA	13 Sep 16 14:29	BMW
Temperature - Field	9.63	deq. C	NA	170.1	13 Sep 16 14:29	BMW
Specific Conductance, Fld	974	umhos/cm	1	120.1	13 Sep 16 14:29	BMW
pH, Field	6.91	units	1.00	I-1586-85	13 Sep 16 14:29	BMW
pH PH	* 7.3	units	1.0	SM 4500 H+B-96	16 Sep 16 11:51	RC
EH, Field	-111.8	units	NA	SM 2580B	13 Sep 16 14:29	BMW
Dissolved Oxygen, Field	0.58	mg/L	0.10	SM 4500-0 G	13 Sep 16 14:29	BMW
Turbidity, Field	< 0.1	NTU	0.1	180.1	13 Sep 16 14:29	BMW
Radium 226	See Attac	hed			6 Oct 16 6:13	ABL
Radium 228	See Attac	hed		EPA M9320	6 Oct 16 6:13	ABL
Sulfate	127 @	mq/L	4.0	ASTM D516-02	22 Sep 16 7:08	AKF
Chloride	5.0	mq/L	3.0	SM 4500 C1 E	22 Sep 16 8:20	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	22 Sep 16 12:01	RMB
Solids, Total Dissolved	558	mg/L	10	SM 2540 C-97	16 Sep 16 15:00	RC
Calcium	134.0	mg/L	0.500	SW6010C	22 Sep 16 11:46	
Lithium	0.028	mg/L	0.005	SW6010C	22 Sep 16 11:46	
Barium	0.083	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Beryllium	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	22 Sep 16 11:46	RMV
	See Narra	tive				
Cobalt	< 0.005	mg/L	0.005	SW6010C	22 Sep 16 11:46	RMV
	See Narra	tive				
Molybdenum	< 0.015	mg/L	0.015	SW6010C	22 Sep 16 11:46	PMV
Boron	< 0.1	mg/L	0.1	SW6010C	22 Sep 16 11:46	
Antimony	< 1 @	ug/L	0.5	SW6020A	22 Sep 16 11:33	RMV
Arsenic	2.35 @	ug/L	0.50	SW6020A	21 Sep 16 14:05	RMV
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Lead .	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	RMV
Selenium	< 1 @	ug/L	0.5	SW6020A	21 Sep 16 14:05	VMS
Thallium	< 0.2 @	ug/L	0.1	SW6020A	21 Sep 16 14:05	RMV
Fluoride	0.200	mg/L	0.020	EPA 300.0	23 Sep 16 12:44	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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 concentration of other analytes # = Due to internal standard response

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



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



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Date Reported: 7 Oct 2016

Work Order #: 201631-0470 Account Number: 006106

PO #: 48679

T J NEWKIRK OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES:

The initial known recovery for cobalt and chromium was elevated above acceptance range for samples 16-A47617 through 16-A47623. Data below the reporting limit was reported.

No other problems were encountered with these analyses.

MVTL

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MEMBER ACIL

Page: 1 of 1

Quality Control Report Lab IDs: 16-A47617 to 16-A47623 Project: HOOT LAKE PLANT Work Order: 201631-0470

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 25.0	106 105	85-115 85-115	25.0 25.0	a47628qc a47755qc	< 0.5 < 0.5	26.4 27.2	106 109	75-125 75-125	26.4 27.2	26.8 27.3	107 109	1.5 0.4	10 10	100	90-110	< 0.5 < 0.5
Arsenic ug/L	25.0	106	85-115	25.0	16A47628q	3.57	29.8	105	75-125	29.8	30.0	106	0.7	10	101	90-110	< 0.5
Barium mg/L	1.000	105	85-115	1.00	16A47627q	0.042	1.080	104	75-125	1.080	1.110	107	2.7	10	103	90-110	< 0.005
Beryllium mg/L	1.000	102	85-115	1.00	16A47627q	< 0.005	1.030	103	75-125	1.030	1.080	108	4.7	10	102	90-110	< 0.005
Boron mg/L	1.000	106	85-115	1.00	16A47627q	0.187	1.250	106	75-125	1.250	1.310	112	4.7	10	98	90-110	< 0.1
Cadmium ug/L	5.00	106	85-115	5.00	16A47628q	< 0.2	5.20	104	75-125	5.20	5.35	107	2.8	10	101	90-110	< 0.1
Calcium mg/L	50.00	106	85-115	50.0	16A47627q	128.0	177.0	98	75-125	177.0	187.0	118	5.5	10	101	90-110	< 0.5
Chloride mg/L	-	-	-	60.0	16-A47626	< 3	60.4	101	85-120	60.4	57.9	96	4.2	5	105	90-110	< 3
Chromium mg/L	1.000	108	85-115	1.00	16A47627q	< 0.01	1.060	106	75-125	1.060	1.100	110	3.7	10	105	90-110	< 0.01
Cobalt mg/L	1.000	109	85-115	1.00	16A47627q	< 0.005	1.040	104	75-125	1.040	1.080	108	3.8	10	105	90-110	< 0.005
Fluoride mg/L	0.200	95	85-115	0.20 0.20	16-A47623 16-A46834	0.200 0.120	0.360 0.330	80 105	75-125 75-125	0.360 0.330	0.360 0.320	80 100	0.0 3.1	10 10	99	90-110	< 0.02
Lead ug/L	25.0	107	85-115	25.0	16A47628q	< 1	25.6	102	75-125	25.6	26.8	107	4.6	10	101	90-110	< 0.5
Lithium mg/L	1.000	106	85-115	1.00	A47627qc	0.012	1.080	107	75-125	1.080	1.100	109	1.8	10	105	90-110	< 0.005
Mercury ug/L	_	-	-	0.10	16-A47623	< 0.005	0.096	96	67-106	0.096	0.098	98	2.1	9	97	76-113	< 0.005
Molybdenum mg/L	1.000	104	85-115	1.00	16A47627q	< 0.015	1.030	103	75-125	1.030	1.090	109	5.7	10	102	90-110	< 0.015
pH units	-	-	-	-	-	-	-	-	-	7.4	7.3	_	1.4	2.5	101	90-110	-
Selenium ug/L	25.0	111	85-115	25.0	16A47628q	< 1	26.8	107	75-125	26.8	27.3	109	1.8	10	101	90-110	< 0.5
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	424 550	427 529	-	0.7 3.9	13 10	86	85-115	< 10
Sulfate mg/L	-	-	-	60.0	16-A47626	< 4	62.2	104	78-126	62.2	60.0	100	3.6	5	99	90-110	< 4
Thallium ug/L	5.00	107	85-115	5.00	16A47628q	< 0.2	5.18	104	75-125	5.18	5.44	109	4.9	10	102	90-110	< 0.1





Inter-Mountain Labs -

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 10/4/2016

CLIENT: Project: MVTL Laboratories, Inc.

Work Order 31-0470

Lab Order:

S1609274

CASE NARRATIVE

Report ID: S1609274001

Samples A47617 S2A, A47618 S3AR, A47619 S51, A47620 S52, A47621 S10R, A47622 S13, and A47623 S14R were received on September 16, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID: ClientSample ID: A47617 S2A

S1609274-001

COC:

Date Reported

10/4/2016

Report ID

S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 12:17:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/28/2016 916 09/28/2016 916 09/29/2016 031 09/29/2016 031	МВ МВ МВ МВ	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Е

Analyte detected below quantitation limits J

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

X Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID:

S1609274-002 ClientSample ID: A47618 S3AR

COC:

10/4/2016

Date Reported Report ID

S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 1:04:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments						Date Analyzed/l	nit
Analyses	Result	Units	Qual	RL_	Method 	Date Allalyzeu/i	
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1 2	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/28/2016 916 09/28/2016 916 09/29/2016 332 09/29/2016 332	МВ МВ МВ МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory L

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



nter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID:

S1609274-003 ClientSample ID: A47619 S51

COC:

Date Reported Report ID

10/4/2016 \$1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 4:04:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments			01	D.	Method	Date Analyzed/li	nit
Analyses	Result	Units	Qual	RL	Wethou	Date Analyzoum	
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/29/2016 1316 09/29/2016 1316 09/29/2016 633 09/29/2016 633	MB MB MB MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: *All*

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID:

S1609274-004 ClientSample ID: A47620 S52

COC:

10/4/2016

Date Reported Report ID

S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 4:43:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments					_		.,,
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA 5.8 3.2	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/29/2016 1316 09/29/2016 1316 09/29/2016 935 09/29/2016 935	МВ МВ МВ МВ

These results apply only to the samples tested.

Qualifiers:

- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL М
- Outside the Range of Dilutions
- Matrix Effect

RL - Reporting Limit

- Calculated Value
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID:

S1609274-005 ClientSample ID: A47621 S10R

COC:

Date Reported 10/4/2016

Report ID

S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 1:51:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/29/2016 1316 09/29/2016 1316 09/30/2016 1851 09/30/2016 1851	MB MB MB MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range Е

Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID:

S1609274-006 ClientSample ID: A47622 S13

COC:

10/4/2016

Report ID

S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 3:10:00 PM

Date Reported

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA 7.7 3.1	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/29/2016 1316 09/29/2016 1316 09/30/2016 2152 09/30/2016 2152	MB MB MB MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits J Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions О

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



nter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

2616 E Broadway Ave. Bismarck, ND 58501

ProjectName:

Work Order 31-0470

Lab ID: ClientSample ID: A47623 S14R

S1609274-007

COC:

Date Reported Report ID

10/4/2016 S1609274001

WorkOrder:

S1609274

CollectionDate: 9/13/2016 2:29:00 PM

DateReceived: 9/16/2016 10:46:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	09/29/2016 1316 09/29/2016 1316 10/01/2016 053 10/01/2016 053	МВ МВ МВ МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Laboratories, Inc.

Date: 10/4/2016

Work Order:

S1609274

Report ID: S1609274001

Project: Work Order 31-0470

Radium 228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L			
MB-387 (09/26/16 12:08) Analyte	RunNo: 139305 Result	PrepD RL		9/16 12:00 Ref Samp		hID: 12349 % Rec Limits	Qual
Total Radium 228	ND	1					
MB-388 (09/30/16 12:49) Analyte	RunNo: 139392 Result	PrepD RL		6/16 12:00 Ref Samp		hID: 12360 % Rec Limits	Qual
Total Radium 228 Radium 228 by Ga/Tech	ND Sample Type LCS	1		: pCi/L			_
LCS-387 (09/26/16 15:09) Analyte	RunNo: 139305 Result	PrepD RL		9/16 12:00 Ref Samp		hID: 12349 % Rec Limits	Qual
Total Radium 228	32	11	38.5		82.7	61.3 - 120	
LCS-388 (09/30/16 15:50) Analyte	RunNo: 139392 Result	PrepD RL		6/16 12:00 Ref Samp		hID: 12360 % Rec Limits	Qual
Total Radium 228 Radium 228 by Ga/Tech	40 Sample Type MS	1	38.5 Units	; pCi/L	105	61.3 - 120	
S1609197-003AMS (09/27/16 00:12) Analyte	RunNo: 139305 Result	PrepD RL		9/16 12:00 Ref Samp		hID: 12349 % Rec Limits	Qual
Total Radium 228	79	1	77	ND	102	61.3 - 120	,
S1609279-001AMS (10/01/16 06:55) Analyte	RunNo: 139392 Result	PrepD RL		.6/16 12:00 Ref Samp	_	hID: 12360 % Rec Limits	Qual
Total Radium 228 Radium 228 by Ga/Tech	74 Sample Type MSD	1	77 Units	ND :: pCi/L	96.6	64.3 - 120	
S1609197-003AMSD (09/27/16 03:14) Analyte	RunNo: 139305 Result	PrepE RL	Date: 09/1 Conc	9/16 12:00 %RPD	Bato %REC	hID: 12349 % RPD Limits	Qual
Total Radium 228	69	1	79	12.6	90.1	20	
S1609279-001AMSD (10/01/16 09:56) Analyte	RunNo: 139392 Result	Prep[RL	Date: 09/2 Conc	%RPD	Bato %REC	thID: 12360 % RPD Limits	Qual
Total Radium 228	72	1	74	2.73	83.1	20	

Qualifiers:

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



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.

Date: 10/4/2016

Work Order: S1609274

Report ID: S1609274001

Project: Work Order 31-0470

Radium 226 in Water - Total by SM7500RA_B	Sample Type MBLK	Units: pCi/L		
MB-1665 (09/29/16 13:16) Analyte	RunNo: 139301 Result	PrepDate: 09/21/16 0:00 RL Spike Ref Samp	BatchID: 12353 %REC % Rec Limits	Qual
Radium 226	ND	0.2		·
MB-1664 (10/03/16 12:43) Analyte	RunNo: 139353 Result	PrepDate: 09/19/16 0:00 RL Spike Ref Samp	BatchID: 12351 %REC % Rec Limits	Qual
Radium 226 Radium 226 in Water - Total by SM7500RA_B	ND Sample Type LCS	0.2 Units: pCi/L		
LCS-1665 (09/29/16 13:16) Analyte	RunNo: 139301 Result	PrepDate: 09/21/16 0:00 RL Spike Ref Samp	BatchID: 12353 %REC % Rec Limits	Qual
Radium 226	5.1	0.2 5.99	85.8 67.1 - 122	
LCS-1664 (09/26/16 11:28) Analyte	RunNo: 139353 Result	PrepDate: 09/19/16 0:00 RL Spike Ref Samp	BatchID: 12351 %REC % Rec Limits	Qual
Radium 226 Radium 226 in Water - Total by SM7500RA_B	5.7 Sample Type MS	0.2 5.99 Units: pCi/L	95.2 67.1 - 122	
S1609270-001CMS (09/29/16 13:16) Analyte	RunNo: 139301 Result	PrepDate: 09/21/16 0:00 RL Spike Ref Samp	BatchID: 12353 %REC % Rec Limits	Qual
Radium 226	43.2	0.2 12 30.0	111 65 - 131	
S1609197-003AMS (09/26/16 11:28) Analyte	RunNo: 139353 Result	PrepDate: 09/19/16 0:00 RL Spike Ref Samp	BatchID: 12351 %REC % Rec Limits	Qual
Radium 226 Radium 226 in Water - Total by SM7500RA_B	13.0 Sample Type MSD	0.2 12 ND Units: pCi/L	108 65 - 131	
S1609197-003AMSD (09/26/16 11:28) Analyte	RunNo: 139353 Result	PrepDate: 09/19/16 0:00 RL Conc %RPD	BatchID: 12351 %REC % RPD Limits	Qual
Radium 226	11.7	0.2 13.0 10.1	98.0 20	

Qualifiers: B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

E Value above quantitation range

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

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 Date 14 Supt 14
pages 1-11

Project Na	me:	Otter Tail Power Co. Hoot Lake Plant	Project Type: Hoot Lake Plant	Name of Samplers: Ben worf
Report To: Attn: Address: Phone:	Paul Vuko P.O. Box	496 alls, MN 56038-0496	Carbon Copy: Attn: Address:	Quote Number: Work Order Number: 31-0470 Lab Numbers:

		Sample Inform	nation						,		E	Bott	le T	уре					7.0	Α	nalysis	
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	Voc Sar		1000 non	500 HNO3	- /	500 HNO3	Filter? Y or s.	500H2SO4	1000 Amber 11	500 NaOH 72504	Other: 150	Other 150 %	Analysis Required			/
A47617	S2A		13 Sept 16	127	GW		o d	2	ĭ	1	N	17									mint	1
8	S3AR			1304	GW			1	1	1)				L)							1
19	S51			1604	GW				1	1	1											1
20	S52			1643	GW				1		1	4					Æ					1
21	S10R			1351	GW																-	1
12	S13			1510	GW					1		Εį		14		21						1
23	S14R			1429	GW			1	7	4	7											1
					GW]
					GW																	
					GW												Ī					

Comments:

			K35		. 0	·
Samples Relinquis	shed By: joen	WHO!	-m	Samples Received	d By: a- Red	(4)
Date: バカイ	pt 14	Time: \\	7 Temp: 1 583	Date: 14 Sept 1		
Samples Relinquis	shed into:	Fridge Lo	og in Cart Other:	J		
Samples Relinquis	shed By:			Samples Received	d By:	
Date:		Time:	Temp:	Date:	Time:	Temp:
Deliver	Samplers	Other:		Seal Number(s) -	If Used	
Transpu	Ambient	Ice	Other:	Seals Intact?	Yes No	

Hoot Lake Site CCR Background Sampling

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

All CCR wells should be low flow purges with turbidity <10 NTU

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring

Field Parameters

рН*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

На

Sulfate

Dissolved Solids, Total

1-LiteR

HLP "I" Monitoring Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 ~ Z - 1000 H NO3

500 HNO

Groundwater Asse	essment			Site:	Otter -	Tail Pov	ver Co./ Hoot Lake
Sampling Personnel:				Facility ID:	SW-2	11	
Ben	WOIT	_		Date: 13	SEPT 1	6	,
				Unique Station	on ID:		
	······	_		Sample ID:	S-2A		
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Yes No Yes No Yes No	-		Protective Postate ID Tag Grout Seal In	? Yes		No (No) No
Well Information Well Depth:	79.61	_		Well Casing	Elevation:		1273.776
Constructed Depth:	79.63	-		Static Water	Elevation:	197	7,39
Casing Diameter:	2"	<u>-</u>		Previous Sta	tic: 119(o.(07	
Water Level Before Pur	rge: 76,3°	9		Water Level	After Sample:	Bel	Ow Dump
Well Volume: , 5	3	Gallons	_	Measuremer	nt Method:	(Elec. \	NLI) Steel Tape
Sampling Information	on _	Ci .	j	0 /		-1.	1. 7
Weather Conditions:	Temp: 🗇	<u>X</u>	Wind: \angle	8 U	Sky:	C10	udy
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment:	(Yes) No	-		Pumping Rat		17	gpm
Well Purged Dry?	Yes (No)	•		Time Pump I	<u> </u>	28	<u>am / (pm)</u>
Time Purged Dry?		-		Time of Sam	pinig. / &	<u>7 </u>	am / (ρm)
Duplicate Sample?	Yes (No)	ID:		Sample EH:	150.4		
Sample Appearance:	4/1-						
		2100		<i>i</i> – 1 mase			· · · · · · · · · · · · · · · · · · ·
ゴ Time pH	Specific	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
Time pH 1211 694	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	Comments:
Time pH 1211 694	Specific	Temp °C .4 .37	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
Time pH 1211 6.94 1214 6.92	Specific Cond.	Temp °C .4 .37	D. O. mg/L 1.13	Turbidity NTU	Gallons Removed	SEQ #	Comments:
Time pH 1211 6.94 1214 6.92	Specific Cond.	Temp °C	D. O. mg/L 1.13 1,19	Turbidity NTU	Gallons Removed	SEQ # 1	Comments:
Time pH 1211 6.94 1214 6.92	Specific Cond.	Temp °C .4 .37	D. O. mg/L 1.13 1,19	Turbidity NTU	Gallons Removed	SEQ # 1 2	Comments:

Comments:

Groundwater Assessment		Site:	Otter	Tail Pov	wer Co./ Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	:11	
Ben work		Date: 3	Seft 1	16	
		Unique Station	on ID:		
		Sample ID:	S-3A-	R	
Well Condition					
Well Locked? Yes No		Protective Po	\rac{1}{2}		No
Well Labeled? Yes No		State ID Tag Grout Seal Ir			No (No)
Casing Straight? (Yes) No		Glout Seal II	ilact? Tes	··· · · · · · · · · · · · · · · · · ·	(NO)
Repairs Necessary: Well Information					
Well Depth: 78.40		Well Casing	Elevation:		1271.562
Constructed Depth: 78.42		Static Water	Elevation: 1	203	-59
Casing Diameter: 2"		Previous Sta	10.0	.46	
Water Level Before Purge: 67.97		Water Level	After Sample:	67	.99
Well Volume: 1,70 Gallons		Measuremen	t Method:	(Elec. \	NL)> Steel Tape
Sampling Information	1	1		í	8
Weather Conditions: Temp: 5 K	Wind:	.bV	Sky:	C10.	udy
Sampling Method: Grundfos (Bladder S	S/T Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: Yes No		Pumping Rat			gpm
Well Purged Dry? Yes No		Time Pump E	Began: 🖊	43	am / pm
Time Purged Dry?		Time of Sam	pling: B C	74	am /(pm)
Duplicate Sample? Yes (No ID:		Sample EH:	-32.5	,	
Sample Appearance: General: Clear	Color: NO	ປ _າ ບ Phase	: Nore		Odor: None
Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. C	mg/L	NTU	Removed	#	Comments:
1250 6.64 965 9.15	5 1.42	0,0	1.75	1	
1257 654 965 9.11	1,47	0.0	3,50	2	
1304 6.54 964 9.11	1,53	0.0	5.25	3	
				4	
				5	
Stabilized? Yes No	Amount Wat	er Removed:	5.25		Gallons
Commonto:			<u> </u>		

Comments:

Groundwater Assessment			Site:	Otter	Tail Pow	er Co./ Hoot Lake
Sampling Personnel:			Facility ID:	SW-2	11	
Ben wolf	_		Date: 13	<u> </u>		
			Unique Station	on ID: 814	1830)
Name of the latest the			Sample ID:	S-51		
Well Condition						A
Well Locked? Yes No			Protective Po		-	(No)
Well Labeled? Yes No Casing Straight? Yes No			State ID Tag Grout Seal Ir			No No
	_		Glout Sear II	itact: (es/		110
Repairs Necessary: Well Information						the state of the s
TT 60			Well Cooing	Elevation:		1296.0
			Well Casing		1))7	1286.9
Constructed Depth: 55.60	_		Static Water		1237.	. 1 /
Casing Diameter: 2"	- ¬		Previous Sta	itic:	7.10	
Water Level Before Purge: 49	7j		Water Level	After Sample:	49	77
Well Volume: $\circ 90$	Gallons	_	Measuremer	nt Method:	Elec. V	VLI Steel Tape
Sampling Information	_	,	1 /		/	
Weather Conditions: Temp: (20	Wind: <u></u>	<u>(</u> /	Sky:	Clo	udy
Sampling Method: Grundfos	(Bladder SS/T)	Disp. Bailer	Whale	Grab Other:		•
				. _		
Dedicated Equipment: Yes No			Pumping Rat			gpm
Dedicated Equipment: Yes No Well Purged Dry? Yes No			Pumping Rat		44	gpm am / pm
				Began: 15°	. / /	\sim
Well Purged Dry? Yes No		_	Time Pump E	Began: 15°		am / pm
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No	ID:	- Color: Ta	Time Pump E Time of Sam Sample EH:	Began: 5° pling: 6 26-0	,04	am / pm
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: 5	lightly cldy		Time Pump E Time of Sam Sample EH: Phase	Began: 5º pling: () ー 2 () e: <i>N</i> つ) (,04	am / (pm) am / (pm)
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No		Color: Ta	Time Pump E Time of Sam Sample EH:	Began: 5° pling: 6 26-0	,04	am / (pm) am / (pm)
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Time PH Specific Cond.	Temp	D. O.	Time Pump E Time of Sam Sample EH: Phase Turbidity NTU	Began: 5° pling: 6 -26.0 e: Nonc	SEQ	am / (pm) am / (pm) Odor: wore
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: 5 PH Specific Cond. 1548 GH KG GH	79444 c/dy	D. O. mg/L 2,45	Time Pump E Time of Sam Sample EH: Phase Turbidity NTU 338.9	Began: 5° pling: 6 -26.0 e: Nonc	SEQ #	am / (pm) am / (pm) Odor: wore
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: 5 PH Specific Cond. 1548 (911 869 1552 (977 876)	Temp °C 8.87	D. O. mg/L 2,45	Time Pump E Time of Sam Sample EH: Phase Turbidity NTU 3389 165,5	Began: 5" pling: 6 -260 e: Nonc Gallons Removed	SEQ # 1 2	am / (pm) am / (pm) Odor: wore
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: 5 PH Specific Cond. 1548 6.91 869 1552 6.77 876 1556 6.75 877	Temp °C 8.87 8.62 8.59	D. O. mg/L 2,45 1 64 1.68	Time Pump E Time of Sam Sample EH: Phase Turbidity NTU 3389 165.5	Began: 5° pling: 6 -26.0 e: Nonc	SEQ # 1 2 3	am / (pm) am / (pm) Odor: wore
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: 5 PH Specific Cond. 1548 6.91 869 1552 6.77 876	Temp °C 8.87	D. O. mg/L 2,45	Time Pump E Time of Sam Sample EH: Phase Turbidity NTU 3389 165,5	Began: 5" pling: 6 -260 e: Nonc Gallons Removed	SEQ # 1 2	am / (pm) am / (pm) Odor: wore

Comments:

Groundwater Assessment			Site:	Otter	Tail Pov	ver Co./ Hoot Lake
Sampling Personnel:			Facility ID:	SW-2	.11	
Ben woit			Date: 13	Sep+11	p	
			Unique Stati	on ID:	634	× 822/5
			Sample ID:	S-52		
Well Condition						
Well Locked? Yes No			Protective P) 	No
Well Labeled? Yes No Casing Straight? Yes No			State ID Tag Grout Seal II)	No No
Repairs Necessary:			Ologi Ocal II	ituot: 100		110
Well Information						
Well Depth: 88,30			Well Casing	Elevation:		1286.62
Constructed Depth: 88.30	52		Static Water	Elevation:	1216	0.03
Casing Diameter: 2"	13 43 /(L)	Previous Static:				
Water Level Before Purge:	70.5	59	Water Level	After Sample:	70	60
Well Volume: 2.89	Gallons	_	Measuremer	nt Method:	Elec. V	NLI Steel Tape
Sampling Information	1 1	. (7		ı	•
Weather Conditions: Temp:	, 4	Wind: 4	S-V	Sky:	0/0	udy
Sampling Method: Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: Yes No-			Pumping Ra	te: , 그 ડ		gpm
Well Purged Dry? Yes No			Time Pump I		07	am / pm
Time Purged Dry?			Time of Sam	pling: 16	4.3	am / pm
Duplicate Sample? Yes No	ID:		Sample EH:	-93.6		
Sample Appearance: General:	lear	Color: No	ار Phase	: None	,	Odor: Nose
/ 2 Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
	°c	mg/L	NTU	Removed	#	Comments:
1619 6.72 842	8,57	.65	0.0	Ĵ	1	
1631 6.70 842	8.55	,57	0,0	6	2	
1643 6,691 843	8.53	,53	0.0	9	3	
					4	
					5	
Stabilized? Yes No		Amount Wat	er Removed:	9	*	Gallons

Comments:

Groundwater Assessn	ment		Site:	Otter	Tail Pov	wer Co./ Ho	ot Lake
Sampling Personnel:			Facility ID:	SW-2	11		
Ben W	016		Date: ∫3	Sept 1	1		
			Unique Stati	on ID: $8c$	624	1	
			Sample ID:	S-10F	र		
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	No		Protective Postate ID Tag Grout Seal In	? Yes		No No No	
Well Information							
Well Depth:	62		Well Casing			1281.47	
Constructed Depth: 57.0	90		Static Water	Elevation: /	1204	73	
Casing Diameter: 2"	,		Previous Sta	itic:			
Water Level Before Purge:	72.04		Water Level	After Sample:	.72.	19	·
Well Volume: 1,40	Gallons		Measuremer	nt Method:	Elec.	WLI ⁾ Ste	el Tape
Sampling Information	/ >	1	1		1	D	
Weather Conditions: Tem	np: (03	Wind: \angle	-4·V	Sky:	010	udy	
Sampling Method: Grun		Disp. Bailer	Whale	Grab Other:			
Dedicated Equipment: Yes	No		Pumping Rat	1 12	-	gpm	
Well Purged Dry? Yes	NO NO		Time Pump B		<u>33</u>	am	/ (pm/
Time Purged Dry?			Time of Sam		51	am	/ pm
Duplicate Sample? Yes			Sample EH:	<u>-17.7</u>			
Sample Appearance: Gen	neral: Clear	Color: No	ົາ	: 1/07c	-	Odor: No	27e
Time 6 pH Spe		D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comment	s:
1339 6.63 9			8.0	1.5	1		
1345 6.61 9	14 9.30	1.65	5.7	3.0	2		
	114 931	1.67	0.0	4.5	3		
					4		
					5		
Stabilized? (es) No		Amount Wat	er Removed:	4.5		Gallons	

Comments:

Groundwater Assessment	Site:	Otter Tail Pov	wer Co./ Hoot Lake
Sampling Personnel:	Facility ID:	SW-211	
Ben woit	Date: 13 Se	pt 16	
	Unique Station ID:		
	Sample ID:	S-13	
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Protective Posts? State ID Tag? Grout Seal Intact?	Yes (Yes) (es)	No No No
Well Information			
Well Depth: 10.27	Well Casing Elevati	1 >) 6	1296.423
Constructed Depth: 90.19	Static Water Elevati), 94
Casing Diameter: 2"	Previous Static:	1210.64	~
Water Level Before Purge: 25, 48	Water Level After S	ample:	,48
Well Volume: Gallons	Measurement Metho	od: Elec.\	WLL Steel Tape
Sampling Information	, 0 .		/ ,
Weather Conditions: Temp: () Wind:	<u> </u>	Sky: C/O	udy
Sampling Method: Grundfos Bladder SS/T Disp. Bailer	Whale Grab	Other:	
Dedicated Equipment: (Yes) No-	Pumping Rate:	1115	gpm
Well Purged Dry? Yes (No)	Time Pump Began:	1450	am / (pm)
Time Purged Dry?	Time of Sampling:	1510	am / pm)
Duplicate Sample? Yes (No) ID:	Sample EH: - &	0,5	
Sample Appearance: General: Clear Color: A	ノクァン Phase: ハノ	774	Odor: Wie
Specific Temp D. O.			
Time pH Cond. C mg/L	Turbidity Gallon		Comments:
1 9 1 1000000 1 1 1 1 1 1 1 1 1 1 1 1 1	1 7 1		Comments:
Time pH Cond. °C mg/L 1454 693 863 79.44 2.38	NTU Remov	ved #	Comments:
Time pH Cond. °C mg/L 1454 693 863 694 2.38	NTU Remov	ved #	Comments:
Time pH Cond. °C mg/L 1454 693 863 10.44 2.38 1458 6.88 863 10.16 1.49	NTU Remov	ved # 1 2	Comments:
Time pH Cond. °C mg/L 1454 693 863 7.44 2.38 1458 6.88 863 10.16 1.49 1502 6.84 864 10.09 1.18	NTU Remov	/ed # 1 2 3	Comments:
Time pH Cond. °C mg/L 1454 693 863 10.44 2.38 1458 6.88 863 10.16 1.49 1502 6.84 864 10.09 1.18 1506 6.84 866 10.07 1.16 1510 6.82 866 9.98 1.07	NTU Remove 1	ved # 1 2 3 4	Comments:

Comments:

Groundwater Assessment		Site:	Otter	Tail Po	wer Co./ Hoot Lake	<u>e</u>
Sampling Personnel:		Facility ID:	SW-2	211		
Ben Wolf		Date : /3	Sept 1	16		_
		Unique Stat	tion ID: 80	1634	12	
		Sample ID:	S-14I	₹		
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		Protective F State ID Ta Grout Seal	g? Yes		No No No	=
Well Information Well Depth: 8711						
Well Depth: 6 73 1		Well Casing	Elevation:		1280.61	_
Constructed Depth: 70.86		Static Wate	r Elevation:	150	1,24	
Casing Diameter: 2"		Previous Sta	atic:			
Water Level Before Purge: 7937		Water Leve	After Sample:	79	37	
Well Volume: Gallons		Measureme	nt Method:	Elec.	WL) Steel Tape	<u>e</u>
Sampling Information	}	/		I		=
Weather Conditions: Temp: 05	Wind:	<u>-6-V</u>	Sky:	Clo	Durly	_
Sampling Method: Grundfos (Bladder SS/)	Disp. Bailer	Whale	Grab Other:		,	_
Dedicated Equipment: Yes No		Pumping Ra			gpm	_
Well Purged Dry? Yes (No)		Time Pump		11	am /(pm)	_
Time Purged Dry?		Time of San	npling: 19	29	am / pm	<u>;</u>
Duplicate Sample? Yes No ID:		Sample EH:	-111.8			
Sample Appearance: General: (e a f	Color: MC	ハー Phase	e: Flakes	<u>C</u>	Odor: Sulfur)u
Time PH Specific Temp Cond. C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:]
1417 7.00 1000 9.80	069	8.8	1.5	1		
1423 6,94 988 9,71	1.62	0.0	3.0	2]
1429 6.91 974 9.63	1.58	0.0	4.5	3		1
				4		1
				5		1
Stabilized? Yes No	Amount Wat	er Removed:	4.5		Gallons	_

Comments:



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FINAL REPORT COMPLETION DATE: 30 Decil QH

Date Reported: 14 Dec 2016

Work Order #: 31-0548 Account #: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

Field Service Manager/Date Reviewed 16 Dec 2016

Date Reviewed

16 Hec/6 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 14 Dec 2016 Lab Number: 16-A56674 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 19 Oct 2016 14:16 Sampled By: MVTL FIELD PERSONNEL Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analy	zed	Analyst
MS Water Digestions					24 00		TWB
Water Digestions					24 00		TWB
Radium 226	See Attac	hed				c 16 15:5	
Radium 228	See Attac	hed		EPA M9320		c 16 15:5	
pH, Field	6.90	units	1.00	I-1586-85		t 16 14:1	
pH	* 7.0	units	1.0	SM 4500 H+B-96		t 16 11:0	
Sulfate	65.3	mg/L	4.0	ASTM D516-02	27 Oc		
Chloride	14.2	mg/L	3.0	SM 4500 Cl E	27 Oc		
Mercury	< 0.005	ug/L	0.005	EPA 245.7		t 16 11:5	
Solids, Total Dissolved	422	mg/L	10	SM 2540 C-97	24 Oc		
Calcium	105.0	mg/L	0.500	SW6010C		t 16 13:2	
Lithium	0.021	mg/L	0.005	SW6010C	27 00	t 16 16:2	6 RMV
Barium	0.118	mg/L	0.005	SW6010C	27 Oc	t 16 13:2	6 RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	27 Oc	t 16 13:2	6 RMV
Boron	< 0.1	mg/L	0.1	SW6010C	27 Oc	t 16 13:2	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	11 No	v 16 19:3	2 RMB
Arsenic	2.80 @	ug/L	0.50	SW6020A	11 No	v 16 19:3	2 RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 No	v 16 14:5	RMB
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	11 No	v 16 19:3	2 RMB
	0.67	ug/L	0.50	SW6020A	27 Oc	t 16 23:4) RMB
Chromium	See Narra		****				,
T 3	< 0.5	ug/L	0.5	SW6020A	3 No	v 16 20:2	7 RMB
Lead	See Narra		***				
Malubdanum	8.24	ug/L	0.50	SW6020A	27 Oc	t 16 23:4) RMB
Molybdenum	See Narra						
and the form	< 2.5 @	ug/L	0.5	SW6020A	15 No	v 16 12:1	5 RMB
Selenium	< 0.1	ug/L	0.1	SW6020A	3 No	v 16 20:2	RMB
Thallium	See Narrat		0.4		- 110		
Fluoride	0.240	mg/L	0.020	EPA 300.0	26 Oc	t 16 0:2	RMB

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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

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

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 14 Dec 2016 Lab Number: 16-A56675 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 19 Oct 2016 14:38
Sampled By: MVTL FIELD PERSONNEL
Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

¥	As Receive	ed	Method	Method	Date	*****
	Result		RL	Reference	Analyzed	Analyst
MS Water Digestions		107			24 Oct 16	TWB
Water Digestions					24 Oct 16	TWB
Radium 226	See Attach	ned			2 Dec 16 15	
Radium 228	See Attach	ned		EPA M9320	2 Dec 16 15	
pH, Field	6.54	units	1.00	I-1586-85	19 Oct 16 14:	
DH	* 7.1	units	1.0	SM 4500 H+B-96	21 Oct 16 11:	
Sulfate	63.5	mg/L	4.0	ASTM D516-02		37 AKF
Chloride	14.4	mg/L	3.0	SM 4500 Cl E		53 AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	27 Oct 16 11:	59 TWB
Solids, Total Dissolved	416	mg/L	10	SM 2540 C-97	24 Oct 16 8:	
Calcium	105.0	mg/L	0.500	SW6010C	27 Oct 16 13:	26 RMV
Lithium	0.021	mg/L	0.005	SW6010C	27 Oct 16 16:	26 RMV
Barium	0.114	mg/L	0.005	SW6010C	27 Oct 16 13:	
Cobalt	< 0.005	mg/L	0.005	SW6010C	27 Oct 16 13:	
Boron	< 0.1	mg/L	0.1	SW6010C	27 Oct 16 13:	
Antimony	< 2.5 0	ug/L	0.5	SW6020A	11 Nov 16 19:	32 RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	11 Nov 16 19:	
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 Nov 16 14:	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	11 Nov 16 19:	32 RMB
Chromium	< 0.5	ug/L	0.5	SW6020A	27 Oct 16 23:	40 RMB
OIII OIIII aiii	See Narrat					
Lead	< 2.5	ug/L	0.5	SW6020A	3 Nov 16 20:	27 RMB
Lead	See Narrat					
Molybdenum	6.80 @	ug/L	0.50	SW6020A	11 Nov 16 19:	32 RMB
Selenium	< 2.5 @	ug/L	0.5	SW6020A	15 Nov 16 12:	16 RMB
Thallium	< 0.5	ug/L	0.1	SW6020A	3 Nov 16 20:	27 RMB
INGLILIM	See Narrat					
Fluoride	0.260	mg/L	0.020	EPA 300.0	26 Oct 16 0:	28 RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 14 Dec 2016 Lab Number: 16-A56676 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 19 Oct 2016 13:03 Sampled By: MVTL FIELD PERSONNEL Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				24 Oct 16	TWB
Water Digestions				24 Oct 16	TWB
Radium 226	See Attached			2 Dec 16 15:55	ABL
Radium 228	See Attached		EPA M9320	2 Dec 16 15:55	ABL
pH, Field	6.49 units	1.00	I-1586-85	19 Oct 16 13:03	BMW
pH	* 7.1 units	1.0	SM 4500 H+B-96	21 Oct 16 11:07	DK
Sulfate	172 mg/L	4.0	ASTM D516-02	27 Oct 16 7:55	AKF
Chloride	< 3 mg/L	3	SM 4500 Cl E	27 Oct 16 8:53	AKF'
Mercury	< 0.005 ug/L	0.005	EPA 245.7	27 Oct 16 11:59	TWB
Solids, Total Dissolved	569 mg/L	10	SM 2540 C-97	24 Oct 16 8:00	RC
Calcium	134.0 mg/L	0.500	SW6010C	27 Oct 16 13:26	RMV
Lithium	0.032 mg/L	0.005	SW6010C	27 Oct 16 16:26	RMV
Barium	0.050 mg/L	0,005	SW6010C	27 Oct 16 13:26	RMV
Cobalt	< 0.005 mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
-	0.200 mg/L	0.100	SW6010C	27 Oct 16 13:26	RMV
Boron	< 0.5 ug/L	0.5	SW6020A	28 Oct 16 0:53	RMB
Antimony	See Narrative	***			
	< 0.5 ug/L	0.5	SW6020A	28 Oct 16 0:53	RMB
Arsenic	See Narrative	0.5	50,00000		
	< 0.25 @ ug/L	0.05	SW6020A	14 Nov 16 14:52	RMB
Beryllium	< 0.25 e ug/L < 0.1 ug/L	0.1	SW6020A	28 Oct 16 0:53	RMB
Cadmium		0.1	BHOOLON	20 000 20 0100	
	See Narrative	0.5	SW6020A	28 Oct 16 0:53	RMB
Chromium	< 0.5 ug/L	0.5	3000204	20 000 10 0.00	
	See Narrative	0.5	SW6020A	3 Nov 16 21:32	RMB
Lead	< 0.5 ug/L	0.5	SWOUZUA	3 NOV 10 21.32	LEMO
	See Narrative		arr/00002	28 Oct 16 0:53	RMB
Molybdenum	2.38 ug/L	0.50	. SW6020A	28 Oct 16 0:53	RMB
Selenium	1.10 ug/L	0.50	SW6020A	28 UCE 16 U:53	KIND
	See Narrative			2 22 16 01.30	RMB
Thallium	< 0.1 ug/L	0.1	SW6020A	3 Nov 16 21:32	KMB
	See Narrative				DIC
Fluoride	0.270 mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain-Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 14 Dec 2016 Lab Number: 16-A56677 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 19 Oct 2016 16:34 Sampled By: MVTL FIELD PERSONNEL Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Oct 16	TWB
					24 Oct 16	TWB
Water Digestions Radium 226	See Attac	hed			2 Dec 16 15:5	ABL
Radium 228	See Attac			EPA M9320	2 Dec 16 15:55	ABL
	6.90	units	1.00	I-1586-85	19 Oct 16 16:34	JLH
pH, Field	* 7.2	units	1.0	SM 4500 H+B-96	21 Oct 16 11:07	DK
рн	143	mg/L	4.0	ASTM D516-02	27 Oct 16 7:55	AKF
Sulfate	11.6	mg/L	3.0	SM 4500 Cl E	27 Oct 16 8:53	AKF
Chloride	< 0.005	ug/L	0.005	EPA 245.7	27 Oct 16 11:59	TWB
Mercury	530	mq/L	10	SM 2540 C-97	24 Oct 16 8:00	RC
Solids, Total Dissolved	110.0	mq/L	0.500	SW6010C	27 Oct 16 13:26	RMV
Calcium	0.022	mg/L	0.005	SW6010C	27 Oct 16 16:26	RMV
Lithium	0.043	mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Barium	< 0.005	mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Cobalt	0.203	mg/L	0,100	SW6010C	27 Oct 16 13:26	
Boron	< 2.5 @	ug/L	0.5	SW6020A	11 Nov 16 20:30	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	11 Nov 16 20:30	RMB
Arsenic	< 0.25 @	ug/L	0.05	SW6020A	14 Nov 16 14:52	RMB
Beryllium	< 0.5 @	uq/L	0.1	SW6020A	11 Nov 16 20:30	RMB
Cadmium	< 0.5	ug/L	0.5	SW6020A	28 Oct 16 0:53	RMB
Chromium	See Narra		0.5	D11002011		
	< 0.5	ug/L	0.5	SW6020A	3 Nov 16 21:32	RMB
Lead	See Narra		0.5	511002011		
		ug/L	0.50	SW6020A	28 Oct 16 0:53	RMB
Molybdenum	1.55		0.50	SW6020A	18 Nov 16 10:32	
Selenium	3.84 @	ug/L	0.1	SW6020A	3 Nov 16 21:32	
Thallium	< 0.1	ug/L	0.1	5,,74248	5 40, 10 21101	
Fluoride	See Narra	mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 14 Dec 2016 Lab Number: 16-A56678 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 19 Oct 2016 15:51 Sampled By: MVTL FIELD PERSONNEL Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				24 Oct 16	TWB
Water Digestions				24 Oct 16	TWB
Radium 226	See Attached			2 Dec 16 15:55	ABL
Radium 228	See Attached		EPA M9320	2 Dec 16 15:55	ABL
pH, Field	6.83 units	1.00	I-1586-85	19 Oct 16 15:51	JLH
pH pH	* 7.1 units	1.0	SM 4500 H+B-96	21 Oct 16 11:07	DK
Sulfate	108 mg/L	4.0	ASTM D516-02	27 Oct 16 7:55	AKF
Chloride	11.5 mg/L	3.0	SM 4500 Cl E	27 Oct 16 9:11	AKF
Mercury	< 0.005 ug/L	0.005	EPA 245.7	27 Oct 16 11:59	TWB
Solids, Total Dissolved	501 mg/L	10	SM 2540 C-97	24 Oct 16 8:00	RC
Calcium	117.0 mg/L	0.500	SW6010C	27 Oct 16 13:26	RMV
Lithium	0.022 mg/L	0.005	SW6010C	27 Oct 16 16:26	RMV
Barium	0.103 mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Cobalt	< 0.005 mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Boron	< 0.1 mg/L	0.1	SW6010C	27 Oct 16 13:26	RMV
Antimony	< 2.5 @ ug/L	0.5	SW6020A	11 Nov 16 20:30	RMB
Arsenic	4.46 @ ug/L	0.50	SW6020A	11 Nov 16 20:30	RMB
Beryllium	< 0.25 @ ug/L	0.05	SW6020A	14 Nov 16 14:52	RMB
Cadmium	< 0.5 @ ug/L	0.1	SW6020A	11 Nov 16 20:30	RMB
Chromium	< 0.5 ug/L	0.5	SW6020A	28 Oct 16 0:53	RMB
CHIOMILL	See Narrative				
Lead	< 0.5 ug/L	0.5	SW6020A	3 Nov 16 21:32	RMB
read	See Narrative	***			
Sec. 7 calcula marries	< 2.5 @ ug/L	0.5	SW6020A	11 Nov 16 20:30	RMB
Molybdenum Selenium	< 2.5 @ ug/L	0.5	SW6020A	18 Nov 16 10:32	RMB
	< 0.1 ug/L	0.1	SW6020A	3 Nov 16 21:32	RMB
Thallium	See Narrative	~			
Fluoride	0.210 mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

RL = Reporting Limit CERTIFICATION: MN LAB # 027-015-125



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 14 Dec 2016 Lab Number: 16-A56679 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 19 Oct 2016 17:41
Sampled By: MVTL FIELD PERSONNEL
Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Receive Result	ed	Method RL	Method Reference	Date Analyz	ed	Analyst
MS Water Digestions					24 Oct	16	TWB
Water Digestions					24 Oct	16	TWB
Radium 226	See Attac	ned			2 Dec	16 15:56	ABL
Radium 228	See Attac	ned		EPA M9320		16 15:56	ABL
pH, Field	6.79	units	1.00	I-1586-85	19 Oct	16 17:41	JLH
pH PH	* 7.1	units	1.0	SM 4500 H+B-96	21 Oct	16 11:07	DK
Sulfate	87.7	mg/L	4.0	ASTM D516-02	27 Oct	16 7:55	AKF
Chloride	B.4	mg/L	3.0	SM 4500 Cl E	27 Oct	16 9:11	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	27 Oct	16 11:59	TWB
Solids, Total Dissolved	471	mg/L	10	SM 2540 C-97	24 Oct	16 8:00	RC
Calcium	116.0	mg/L	0.500	SW6010C	27 Oct	16 13:26	RMV
Lithium	0.025	mg/L	0.005	SW6010C	27 Oct	16 16:26	RMV
Barium	0.067	mg/L	0.005	SW6010C	27 Oct	16 13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	27 Oct	16 13:26	RMV
Boron	< 0.1	mg/L	0,1	SW6010C	27 Oct	16 13:26	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	11 Nov	16 20:30	RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	11 Nov	16 20:30	RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 Nov	16 14:52	RMB
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	11 Nov	16 20:30	RMB
Chromium	< 0.5	ug/L	0.5	SW6020A	28 Oct	16 0:53	RMB
CHIOMITAL	See Narrat						
Lead	< 0.5	ug/L	0.5	SW6020A	3 Nov	16 21:32	RMB
Deng	See Narrat						
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	11 Nov	16 20:30	RMB
Selenium	< 2.5 @	ug/L	0.5	SW6020A	18 Nov	16 10:32	RMB
Thallium	< 0.1	ug/L	0.1	SW6020A	3 Nov	16 21:32	RMB
MIGTITUM	See Narrat						
Fluoride	0.280	mg/L	0.020	EPA 300.0	26 Oct	16 6:51	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health
Analyses performed under our Minnesota Department of Health
The reporting limit was elevated for any analyte requiring a dilution as coded below:

| e | Due to sample matrix | # = Due to concentration of other analytes | + = Due to internal standard response
| certification: Mn LaB # 027-015-125 | WI LaB # 999447680 | ND MICRO # 1013-M | 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

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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 14 Dec 2016 Lab Number: 16-A56680 Work Order #: 31-0548 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 19 Oct 2016 17:18
Sampled By: MVTL FIELD PERSONNEL
Date Received: 20 Oct 2016 14:45

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				24 Oct 16	TWB
Water Digestions				24 Oct 16	TWB
Radium 226	See Attached			2 Dec 16 15:56	
Radium 228	See Attached		EPA M9320	2 Dec 16 15:56	
	6.90 units	1.00	I-1586-85	19 Oct 16 17:18	JLH
pH, Field	* 7.1 units	1.0	SM 4500 H+B-96	21 Oct 16 11:07	
pH	116 mg/L	4.0	ASTM D516-02	27 Oct 16 7:55	AKF
Sulfate	5,1 mg/L	3.0	SM 4500 CL E	27 Oct 16 9:11	AKF
Chloride	< 0.005 ug/L	0.005	EPA 245.7	27 Oct 16 11:59	TWB
Mercury	534 mg/L	10	SM 2540 C-97	25 Oct 16 15:20	RC
Solids, Total Dissolved	129.0 mg/L	0.500	SW6010C	27 Oct 16 13:26	RMV
Calcium	0.030 mg/L	0.005	SW6010C	27 Oct 16 16:26	RMV
Lithium	0.082 mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Barium	< 0.005 mg/L	0.005	SW6010C	27 Oct 16 13:26	RMV
Cobalt		0.1	SW6010C	27 Oct 16 13:26	RMV
Boron		0.5	SW6020A	11 Nov 16 20:30	RMB
Antimony	< 2.5 @ ug/L	0.50	SW6020A	11 Nov 16 20:30	
Arsenic	3.39 @ ug/L	0.05	SW6020A	14 Nov 16 14:52	
Beryllium	< 0.25 @ ug/L		SW6020A	11 Nov 16 20:30	
Cadmium	< 0.5 @ ug/L	0.1	SW6020A	28 Oct 16 0:53	
Chromium	0.86 ug/L	0.50	SWOUZUR	20 000 10 0.00	1410
	See Narrative		emc0000	3 Nov 16 21:32	RMB
Lead	< 0.5 ug/L	0.5	SW6020A	3 NOV 16 21.32	ran.
	See Narrative			77 ** 16 00-20	RMB
Molybdenum	3.17 @ ug/L	0.50	SW6020A	11 Nov 16 20:30	
Selenium	< 2.5 @ ug/L	0.5	SW6020A	18 Nov 16 10:32	
Thallium	< 0.1 ug/L	0.1	SW6020A	3 Nov 16 21:32	RMB
4 3 2 CC 2 - 2 CA CC	See Narrative				
Fluoride	0.280 mg/L	0.020	EPA 300.0	26 Oct 16 6:51	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 12/22/2016

CLIENT: Project:

MVTL Inc

31-0548

Lab Order:

S1610371

CASE NARRATIVE

Report ID: S1610371002

(Replaces S1610371001)

Samples AS6674 S51, AS6675 S52, AS6676 S2A, AS6677 S3AR, AS6678 S10R, AS6679 S13, and AS6680 S14R were received on October 25, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Report S1610371002 replaces report S1610371001 clienr sample id's were incorrect on the COC.

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-001 ClientSample ID: AS6674 S51

COC:

31-0548

Date Reported 12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

DateReceived:

CollectionDate: 10/19/2016 4:42:00 PM

FieldSampler:

10/25/2016 2:22:00 PM

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/init		
Radionuciides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/25/2016 2140	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/25/2016 2140	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0548

Lab ID: ClientSample ID:

S1610371-002 AS6675 S52

COC:

31-0548

Date Reported 12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 3:55:00 PM

DateReceived:

10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

~	_		m	_	-	4-
	63	rfi	m	μ		12

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total			·					
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/26/2016 044	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/26/2016 044	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

В

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL M

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-003 ClientSample ID: AS6676 S2A

COC:

31-0548

Date Reported

12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 3:20:00 PM DateReceived:

10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/26/2016 349	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/26/2016 349	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-004 ClientSample ID: AS6677 S3AR

COC:

31-0548

Date Reported

12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 2:16:00 PM

DateReceived: 10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/26/2016 653	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/26/2016 653	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Ε Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value С

Holding times for preparation or analysis exceeded н

Analyzed by another laboratory

Not Delected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-005 ClientSample ID: AS6678 S10R

COC:

31-0548

Date Reported 12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 2:38:00 PM DateReceived:

10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/26/2016 958	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/26/2016 958	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-006 ClientSample ID: AS6679 S13

COC:

31-0548

Date Reported

12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 1:03:00 PM DateReceived:

10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB
Radium 228	2.3	pCi/L		2	Ga-Tech	11/27/2016 623	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	11/27/2016 623	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ë

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

31-0548

Lab ID:

S1610371-007 ClientSample ID: AS6680 S14R

COC:

31-0548

Date Reported

12/22/2016

Report ID

S1610371002

(Replaces S1610371001)

WorkOrder:

S1610371

CollectionDate: 10/19/2016 4:34:00 PM

DateReceived: 10/25/2016 2:22:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/08/2016 1625	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	11/27/2016 928	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/27/2016 928	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Catculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 11/30/2016

Work Order:

S1610371

Report ID: S1610371001

Project: 31-0548

Radium 228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L			
MB-399 (11/26/16 13:02)	RunNo: 141245	PrepD	Date: 11/0	7/16 14:00	Bat	chID: 12572	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Quai
Total Radium 228	ND	1					
MB-400 (11/26/16 21:11)	RunNo: 141282	PrepD	ate: 11/0	9/16 0:00	Bate	chID: 12587	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1					
Radium 228 by Ga/Tech	Sample Type LCS		Units	: pCi/L			
LCS-399 (11/23/16 14:21)	RunNo: 141245	PrepD		7/16 14:00		:hID: 12572	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	35	1	39.1		89.8	61.3 - 120	
LCS-400 (11/27/16 00:15)	RunNo: 141282	PrepD		9/16 0:00		:hID: 12587	
Analyte	Result	RL.	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	37	1	39.1		95.0	61.3 - 120	
Radium 228 by Ga/Tech	Sample Type LCSD		Units:	pCi/L			
LCSD-399 (11/23/16 17:25)	RunNo: 141245	PrepD	ate: 11/0	7/16 14:00	Bato	:hID: 12572	J.
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	41	1	35	14.8	104	20	
LCSD-400 (11/27/16 03:19)	RunNo: 141282	PrepD	ate: 11/09	9/16 0:00	Bato	hID: 12587	1
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	37	1	37	1.70	93.4	20	
Radium 228 by Ga/Tech	Sample Type MS		Units:	pCi/L			
S1610375-002AMS (11/24/16 05:43)	RunNo: 141245	PrepDa	ate: 11/07	7/16 14:00	Bato	hID: 12572	- 1
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	62	2	78.2	ND	79.7	64.3 - 120	
Radium 228 by Ga/Tech	Sample Type MSD		Units:	pCi/L			
S1610375-002AMSD (11/24/16 08:47)	RunNo: 141245	PrepDa	ate: 11/07	7/16 14:00	Bato	hID: 12572	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	65	2	62	3.77	82.8	20	

Qualifiers:

- Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory
- Outside the Range of Dilutions 0
- Spike Recovery outside accepted recovery limits
- Value above quantitation range
- Analyte detected below quantitation limits
- Not Detected at the Reporting Limit ΝĐ
- R RPD outside accepted recovery limits
- Matrix Effect Х

20



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order:

Project:

MVTL Inc

S1610371

Radium 226

31-0548

Date: 11/30/2016

Report ID: S1610371001

Radiu	m 226 In Water - Total by SM7500RA_B	Sample Type MBLK			Units	: pCi/L			
	MB-1684 (11/11/16 08:57)	RunNo: 1	10833	PrepD	ate: 11/0	2/16 0:00	Bato	hID: R140833	
	Analyte	Resu	ilt	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	ND		0.2					
Radiu	m 226 in Water - Total by SM7500RA_B	Sample Type LCS			Units	: pCl/L			
	LCS-1683 (11/08/16 16:25)	RunNo: 14	10833	PrepD	ate: 11/0	2/16 0:00	Bato	hID: R140833	
	Analyte	Resu	lt	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	25.9		0.2	26.5		97.6	67.1 - 122	
Radiu	m 226 in Water - Total by SM7500RA_B	Sample Type LCSD			Units	pCi/L			
	LCSD-1683 (11/08/16 16:25)	RunNo: 14	0833	PrepD	ate: 11/0	2/16 0:00	Bato	hID: R140833	
	Analyte	Resu	lt	RL.	Conc	%RPD	%REC	% RPD Limits	Qual

27.2

0.2

25.9

4.89

102

Qualifiers:

- Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- Outside the Range of Dilutions Spike Recovery outside accepted recovery limits
- Value above quantitation range
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- Matrix Effect Х



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Page: 9 of 9

Date Reported: 5 Dec 2016

Work Order #: 201631-0548 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES: The internal standard count recoveries associated with chromium failed in the reporting limit checks for samples 16-A56674 through 16-A56680. The data was reported based on the acceptable recovery of the reporting limit checks.

The internal standard count recoveries associated with molybdenum failed in the unspiked sample, matrix spike, and matrix spike duplicate for sample 16-A56674. The data was reported based on acceptable recoveries of the matrix spikes.

The internal standard count recoveries associated with arsenic, selenium, cadmium and antimony failed in the unspiked sample, matrix spike, and matrix spike duplicate for sample 16-A56676. That data was reported based on acceptable recoveries of the matrix spikes.

The internal standard count recoveries associated with chromium failed in the known for samples 16-A56676 through 16-A56680. The data was reported based on the acceptable recovery of the knowns.

Internal standard counts associated with thallium and lead failed in the reporting limit checks for samples 16-A56674 through 16-A56680. Data was reported based on acceptable recoveries of the reporting limit checks.

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Page: 1 of 3

Quality Control Report Lab IDs: 16-A56674 to 16-A56680

Lab Us: 16-A56674 to 16-A56680 Project: HOOT LAKE PLANT CCR							Work Order: 201631-0548										
Analyte	LCS Spike Ant	LCS Rec	The state of the s	Spike -	Matrix Spike [] # [] #	Matrix Spike Org Result	Matrix	Matrix Spike Rec %	Matrix Spike % Rec Limits		MSD/ Dup Result	MSD Rec.	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0	109 106	85-115 85-115	25.0 25.0 25.0	16A56673q 16A56675q 16A56673q	< 0.5 < 2.5 < 2.5	26.7 27.6 26.8	107 110 107	75-125 75-125 75-125	26.7 27.6 26.8	27.5 27.8 27.8	110 111 111	3.0 0.7 3.7	10 10 10	102 110 108	90-110 90-110 90-110	< 0.5
Arsenic ug/L	25.0 25.0	102 108	85-115 85-115	25.0 25.0 25.0	16A56673q 16A56675q 16A56673q	1.41 < 2.5 < 2.5	28.8 29.0 27.8	110 116 111	75-125 75-125 75-125	28.8 29.0 27.8	29.1 30.4 28.7	111 122 115	1.0 4.7 3.2	10 10 10	103 102 104	90-110 90-110 90-110	< 0.5
Barium mg/L	1.000	105	85-115	1.00	16A56674q	0.118	1.240	112	75-125	1.240	1.250	113	0.8	10	102	90-110	< 0.005
Beryllium ug/L	2.50	110	85-115	2.50 2.50	16-A56675 A56673qc	< 0.25 < 0.25	2.59 2.93	104 117	75-125 75-125	2.59 2.93	2.78 2.64	111 106	7.1 10.4	10 10	105	90-110	< 0.05
Boron mg/L	1.000	102	85-115	1.00	16A56674q	< 0.1	1.160	116	75-125	1.160	1.160	116	0.0	10	103	90-110	< 0.1
Cadmium ug/L	5.00 5.00	106 108	85-115 85-115	5.00 5.00 5.00	16A56673q 16A56675q 16A56673q	<0.1 <0.5 <0.5	5.34 5.51 5.25	107 110 105	75-125 75-125 75-125	5.34 5.51 5.25	5.46 5.70 5.40	109 114 108	2.2 3.4 2.8	10 10 10	100 106 108	90-110 90-110 90-110	
Calcium mg/L	50.00	104	85-115	50.0	16A56674q	105.0	161.0	112	75-125	161.0	163.0	116	1.2	10	99	90-110	< 0.5
Chloride mg/L	:	SI_	-	60.0 600	16-A56669 16-A56716	<3 137	56.5 719	94 97	85-120 85-120	56.5 719	55.3 721	92 97	2.I 0.3	5	92 92	90-110 90-110	1
Chromium ug/L	25.0	113	85-115	25.0 25.0	16A56675q 16A56673q	< 0.5 < 0.5	21.5 23.6	86 94	75-125 75-125	21.5 23.6	23.0 24.4	92 98	6.7 3.3	10 10	106 104	90-110 90-110	*
Cobalt mg/L	1.000	106	85-115	1.00	16A56674q	< 0.005	1.040	104	75-125	1.040	1.070	107	2.8	10	106	90-110	< 0.005
Fluoride mg/L	0.200	105	85-115	0.20 0.20	16-A56678 A56680qc	0.210 0.280	0.400 0.450	95 85	75-125 75-125	0.400 0.450	0.420 0.440	105 80	4.9 2.2	10 10	104 98	90-110 90-110	

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Page: 2 of 3

Quality Control Report

Lab IDs: 16-A56674 to 16-A56680 Project: HOOT LAKE PLANT CCR								Work Order: 201631-0548										
Analyje	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike 1	Matrix Spike Orig Result	22.4	Matrice Spike	Matrix		MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<	Known Rec (%)	Known % Rec Limits	181 01 (E. S. Marie Marie 1911)	
Lead ug/L	25.0	101	85-115	25.0 25.0	A56675qc A56673qc	< 2.5 < 2.5	25.4 25.9	102 104	75-125 75-125	25.4 25.9	24.9 25.5	100 102	2.0 1.6	10 10	100 98	90-110 90-110	< 0.5	
Lithium mg/L	1.000	106	85-115	1.00	16-A56674	0.021	1.150	113	75-125	1.150	1.170	115	1.7	10	106	90-110	< 0.005	
Mercury ug/L	:	-	-	0.10	16-A56680	< 0.005	0.092	92	67-106	0.092	0.089	89	3.3	9	102	76-113	< 0.005 < 0.005	
Molybdenum ug/L	25.0 25.0	98 107	85-115 85-115	25.0 25.0 25.0 25.0	16A56675q 16A56673q 16A56675q 16A56673q	6.07 0.60 6.80 < 2.5	30.9 25.2 34.4 27.5	99 98 110 110	75-125 75-125 75-125 75-125	30.9 25.2 34.4 27.5	30.5 25.3 34.6 28.4	98 99 111 114	1.3 0.4 0.6 3.2	10 10 10 10	95 94 104 106	90-110 90-110 90-110 90-110	< 0.5 < 0.5	
pH units		-	-	-		-		-	-	7.1	7.1		0.0	2.5	101	90-110		
Selenium ug/L	25.0 25.0 25.0	111 112 104	85-115 85-115 85-115	25.0 25.0 25.0	16A56673q 16A56675q A56673qc	<0.5 <2.5 <2.5	28.9 28.5 27.5	116 114 110	75-125 75-125 75-125	28.9 28.5 27.5	28.7 28.6 25.9	115 114 104	0.7 0.4 6.0	10 10 10	101 108 101	90-110 90-110 90-110	< 0.5 < 0.5	
Solids, Total Dissolved mg/L	:	-	-	-	:	-	:	:	-	592 471 181	576 471 174	:	2.7 0.0 3.9	10 13 13	101 94	85-115 85-115		
Sulfate mg/L		-	-	60.0 60.0	16-A56675 16-A57754	63.5 11.0	123 72.7	99 103	78-126 78-126		127 72.5	106 102	3.2 0.3	5 5	98 100	90-110 90-110		
Thallium ug/L	5.00	102	85-115	5.00 5.00	A56675qc A56673qc	< 0.5 < 0.5	5.13 5.23	103 105	75-125 75-125	5.13 5.23	5.06 5.14	101 103	1.4 1.7	10 10	100 99	90-110 90-110	< 0.1	

Page: 3 of 3

*** Due to result < 15 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 4 mg/L.

The beryllium matrix spike duplicate RPD was above the 10% limit at 10.4%, this result would be rounded down to 10% and meet the criteria.

Approved by:

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

New Ulm, MN 56003 Fax: 507 359 2890

Other:

Field Service Chain of Custody Record

This is an exact copy of the original document

Project Nar		Type:	Hoot Lake Pla	int			Name of Samplers: Jeth Hoffman													
Report To:	Otter Tail Po	Hoot Lake Pla wer Company		Carbon	Copy:			_	-	4										
Attn:	T. J. Newkir	k `		Attn:					1	Quote Number:										
Address:	P.O. Box 49	6									Work Order Number: Gt. G+ C									
		, MN 56038-049	6									Work Order Number: 31-0548 Lab Numbers:								
Phone:	218-739-83	14							LGIO	144	11100	10.								
	S						_	_	E	ott	le T	VDe)	_	-		Analy	reie		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	Voc Ser	500 none	000 none	500 HNO3						500 NaOH H2804	ther. 150	Other 150 A	1 1	/
	M-1		190at 16		GW			45		cy Cy	14	0	4	S	-	45	0	0	44	-
82	M-3		1	WL	GW															
A56663	S-1			123	GW				1	1	6								E	_
A56676				1303	GW				1	ì	0				-				Tagette.	-
83	S-3			WL	GW					-	-				-				E, H, I	_
	S-3A-R			1634	GW		+		1	1	V							_	EHI	
84				WL	GW		1		-	-	7								Cilit	_
	S-5			(359	GW .		+		1	1	V									-
	S-6				GW		-		-	1	6	-				-	-		E	_
	S-10R*			1551	GW				1	1	4				-		-			_
Comments:	Submit elec Work Orde			1501	13.11	R35			11		Ш					7			E, H,I	
	elinquished B		1-00			400	Sar	nple	s R	ecei	ved	Bv:	11		1	11	di	۸.		
Date: 20	Oct 16	114	Time:)44		Temp:			e:7					_	Tim	e.	_	140	_	Temp: 0.00	
	elinquished in		(Fridge	Log in (Cart	Other:					1/5/2			. ,,,,,	_	-	1 -		Trompio. O.C	
	elinquished B	y:					Sar	nple	s R	ecei	ved	Ву:								
Date:		0 1	Time:		Temp:		Dat	e:						Tim	e:				Temp:	
Delive							Seal Number(s) - If Used													
Trans,		Ambient	ce		Other		Cor	le Ir	+	42			Voc			NIa				

Seals Intact?

Yes

No

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

Project Name:	Otter Tail Power Co. Hoot Lake Plant	Project Type: Hoot Lake Plant	Name of Samplers: Tolk Hollman
Report To: Otter Tail Attn: T. J. New Address: P.O. Box Fergus F 218-739-	/kirk 496 alls, MN 56038-0496	Carbon Copy: Attn: Address:	Quote Number: Work Order Number: Lab Numbers:

	S	ample Inform	nation				Bottle Type									Analysis		
cab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	500 none	1000 none	SOU HIVOS	/>	T	7		500 NaOH 12504	Other: 150 H2SO4	Analysis Required	
Cole	S-11		1900t16	1223	GW				1	1	1	1	1	1	45/	7	1	C
79	S-13 🐣		1	1741	GW				11	1	1	1			+	+	E	HIT
80	S-14R *			1718	GW		\top		11	18	1	+			\dashv	+		HIT
	S-50			419	GW				1	V	1	+	\vdash		+	+	-	E
80)	S-2014			1503		V			11	1	7			\dashv		+		E
71	Leachate			1642							,	1	1		1	1		C.
85	Leachate LD	os		Sample					+	+		1			1	+		4
72	SW-1 Upstr	eam		1555					1	+	+	1				+		E
73	SW-2 Downstream			1520						+	1		-			1		F
69	Equipment E	Blank		1210					1	1	4				1	-		E
10	Duplicate		1	1339		1			1	1	3	1		-	-	-		E

Samples Relinquished By: Samples Received By: Date: 20 00 10 Time-1445 Temp: Date: 2000+ 16 Time: 1443 Temp:() OC Samples Relinquished into: Fridge/ Log in Cart Other: Samples Relinquished By: Samples Received By: Date: Time: Temp: Date: Time: Temp: Delive . Samplers Other: Seal Number(s) - If Used Transport: **Ambient** Ice - 200 Other: Seals Intact? Yes No

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

Transpo...

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Ambient

Project Nar		Otter Tail Power		Project	Type:	Hoot Lake Pla	nt			Nan	ne o	f Sa	mp	ers:	T	4	10	f-max	>		
Report To:		wer Company		Carbon (Сору:										7	2511	NO CI	А			
Attn:	Paul Vukonio			Attn:						Quote Number:											
Address:	P.O. Box 496			Address	<u> </u>					Wor	k O	rder	· Nur	nber	<u>.</u>						
Phone:	Fergus Falls, MN 56038-0496 218-739-8349							Lab Numbers:													
Sample Information							Bottle Type							_	Analysis						
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	Voc Ser	1000 none	1000 HNO3	500 HNO3			7		500 Amber H2SO4	HOBNOOH	Other 150 H2SO4	Analysis Required	Allai	ysis	
196676	S2A		1900tl		GW		1	1	2	1	n	45	1	49 /	+	+	10	see attac	skenout	11 ~	+-
	S3AR		1	1.4	GW			1	2	1	n		+	+	+	+	-	see allal	minent	11	-
A56674	S51			14 /G	GW							-1	+	+	+	+	+			-	+
75	S52		11	1438			-	1	2	1	n	-	-	+	+	+	+	-		1	1
18			-		GW			1	2	1	n		-	+	+	+	+			1	-
	S10R		11	1551	GW		-	1	2	1	n		_	1	-	-	1				1
19	-		1	1741	GW			1	2	1	n				_					1	
80	S14R		-	1718	GW	-	-	1	2	1	n			+	+	+	-				12
Camanasta	CCR wells																				
Comments	Work Order	г #2			R	35															
	elinquished B		4-bl			N							4	1	Ell	d	W				
Date: 20 Samples R	elinguished in		Time:	Log in (0 533 Other:	Da	te: 🍃	20	00	+1	6		Time		144		Temp:	0-00		
	elinquished B		93			J G 101.	Sai	nal	es R	ece	ived	Bv			_				_	_	_
Date:			Time:		Temp:		Da				.,	Jy.	$\overline{}$	Time	a:			Temp:			
Deliver	Samplers Other:							Seal Number(s) - If Used													

Seals Intact?

Yes

No

Other:

WORK OFORT "C

not zolle

Hoot Lake Site CCR Background Sampling

Site	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (gal/minute)	Goes Dry?
S2A	HLP H, HLP I	79.63	2	1273.776	Bladder	Yes	< 0.25	No
S3AR	HLP H, HLP I	78.42	2	1271.562	Bladder	Yes	< 0.25	No
S51	HLP H, HLP I	55.6	2	1286.904	Bladder	Yes	< 0.25	No
\$52	HLP H, HLP I	88.3	2	1286.623	Bladder	Yes	< 0.25	No
S10R	HLP H, HLP I	57.00	2	1281.47	Bladder	Yes	< 0.25	No
S13	HLP H, HLP I	90.19	2	1296.423	Bladder	Yes	< 0.25	No
S14R	HLP H, HLP I	70.86	2	1280.61	Bladder	Yes	< 0.25	Yes

All CCR wells should be low flow purges with turbidity <10 NTU

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring Field Parameters

* Field and Laboratory Measurements

Total Concentration Parameters

Calcium

√Fluoride

√pH

Sulfate

Dissolved Solids, Total

1-LiteR

Host Lake Oct 2016

HLP "E" Monitoring Parameters

S1, S10R, S11, S13, S14R, S2A, S3AR, S5, S50, S6, S2014 FALL ONLY

Field Parameters

pH*

Specific Conductance*

Temperature

Appearance*

Dissolved Oxygen

Turbidity

1000 NOAL

* Field and Laboratory Measurements

Routine Parameters

Alkalinity, Total as CaCO₃

Arsenic

Boron!

Chloride

Dissolved Solids, Total

Selenium

Static Water Elevation

Sulfate

Suspended Solids, Total

NOTE: Equipment Blank and the Duplicate should be analyzed for this list in the Fall event

HLP "I" Monitoring Parameters

500 HAVO

CCR - Appendix IV - Assessment Monitoring

```
Antimony
Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 ~ 2 - 1000 H No 3
```

Groundwater Assessme	ent		Site:	Otte	er Tail Power C	o./ Hoot L
Sampling Personnel:			Facility ID:		-211	
Ben wolf			Date:	7 007	16	
			Unique Sta	ation ID:		
			Sample ID	: S-5	1	
Well Condition					_	
Well Locked? (es)	No		Protective			_
Well Labeled? Yes	(10)		State ID Ta			_
Casing Straight? (es)	No		Grout Sea	Intact? (Yes) No	_
Repairs Necessary:						
Well Information						
Well Depth: 55.60			Well Casin	g Elevation:	1286.9	
Constructed Depth:			Static Wat	er Elevation:	1237.2	5
Casing Diameter: 2"			Previous S	tatic:		
Water Level Before Purge:	19.65		Water Leve	el After Sample	e: <i>50,6</i> 3	
Well Volume: , 97	Gallons	_		ent Method:	Elec. WL	Steel T
Sampling Information			. /		,	
Weather Conditions: Temp	: 50	Wind:	LOV	Sky:	Clouds	/
Sampling Method: Grundfo	s Bladder SSA	Disp. Bailer	Whale	Grab Other	5	
Dedicated Equipment: Yes	Na		Pumping R	ate: 🤰		
Well Purged Dry? Yes	(No)		Time Pump	Began: 14	07	am /d
Time Purged Dry?	-		Time of Sa	1 1.	6	am / /
Duplicate Sample? Yes	No ID:		Sample El-	7		
Supiloate outripie: 100	al: Sligstly cla	N. Oalan N.	クラン Pha	11	et ode	-: None
Sample Appearance: Gener	ar Jiy Try 210	(4 Color: 1	Pha:	se: 4] 17-1(e. Gar	, 1003-
3 Specif	ic Temp	D. O.	Turbidity	Gallons		ments
Time pH Cond.	°c	mg/L	NTU	Removed	SEQ#	
1410 6.91 86	8.48	91	10.7	1.2	1	
1413 6.91 85		188	9,9	2,4	2	
1416 6.90 85		. 86	9.9	3.6	3	
					4	
					5	
				7/	10	
Stabilized? (es) No		Amount W	ater Removed	3.6		
Comments:						

Groundwater Asse	ssment			Site:	Otte	r Tail Power C	o./ Hoot La
Sampling Personnel:				Facility ID:	sw.	-211	
Ben	wolf			Date: 10	9 0041	6	
		3		Unique Sta	ition ID:		
				Sample ID	S-52	2	
Well Condition	9				9)	
Well Locked?	Yes No			Protective	6	No	_
Well Labeled?	Yes No	_		State ID Ta			_
Casing Straight? Repairs Necessary:	Tes NO	-		Crout Ocal	made: (CS	110	_
Well Information							
Well Depth:	88.30			Well Casin	g Elevation:	1286.62	
Constructed Depth:	-			Static Water	er Elevation:	1215.99	
Casing Diameter:	2"			Previous S	tatic:		
Water Level Before Purg	je: 70.6	53		Water Leve	el After Sample	3: 72.04	
	88	Gallons		Measurem	ent Method:	E/ec. WLP	Steel T
Sampling Information	n			1 .			
Weather Conditions:	Temp: 5	0	Wind:	LV	Sky:	c/ords	L.
Sampling Method:	Grundfos	Bladder SS/T)	Disp. Bailer	Whale	Grab Other	:	
Dedicated Equipment:	es No			Pumping R	ate: 6		
Well Purged Dry?	Yes No	_		Time Pump		118	am /d
Time Purged Dry?		<u> </u>		Time of Sa	mpling: 14	38	am / (
Duplicate Sample?	Yes 🔞	ID:		Sample EH	-94.1		
Sample Appearance:	General:	clear	Color: 1	ore Phas	se: Light le	d. oder:	None
P	Specific	Temp	D. O.	Turbidity	Gallons		ments
	Cond.	°C	mg/L	NTU	Removed	SEQ#	:
1423 6.60	108	8.22	.87	0.0	3	1	
1428 6.56	973	8,21	.75	6.0	b	2	
1433 6.55	973	8.20	.70	0.0	9	3	
1938 6.59	972	8.19	.65	0.0	12	4	
1198 0.01		3	MO O	10.0		5	-
					17	lo lo	
	No		Amount Wa	ater Removed	: 12		
Comments:							

Sampling Personnel:		Facility ID:	-		
		I donly in.	SW-2	11	
		Date: 19	oct 1	6	
		Unique Station	ı ID:		
		Sample ID:	S-2A		
Well Condition		Destantina Dan	its? Æ		Nie
Well Locked? Yes No Well Labeled? Yes No		Protective Pos State ID Tag?	Yes		No
Well Labeled? Yes No Casing Straight? Yes No		Grout Seal Inta			No
Repairs Necessary:					
Well Information					
Well Depth: 79.61		Well Casing E	levation:		1273.776
Constructed Depth: 79.63		Static Water E	levation: 1	197,	37
Casing Diameter: 2"		Previous Static	: 1196.6	9	
Water Level Before Purge: 76.65		Water Level A	fter Sample:	Bell	ou pump
(1)	allons	Measurement		Elec.	
Sampling Information		1			
Weather Conditions: Temp: 49	Wind: \angle	. EU	Sky:	clou	edy.
	dder SS/) Disp. Bailer	Whale G	rab Other:		
Dedicated Equipment: Yes No		Pumping Rate:	, 2		gpm
Well Purged Dry? Yes (No)		Time Pump Be	gan: /2	54	am / m
Time Purged Dry?		Time of Sampl	ing: 130	73	am / pm
Duplicate Sample? Yes No ID:	-	Sample EH: 7	47.3		
Sample Appearance: General:	Color:	Phase:			Odor:
Cassifia Te	mp D.O.	Turbidity G	Sallons	SEQ	
Time pH Specific Te			Removed	#	Comments:
Tillio pir	1.01 4.89	0.0	.6	1	
7 10 0 1	3,94 4.95		1.2	2	
20	3.92 4.79	00	1.8	3	
				4	
				5	
01.131 40.742	Amount Ma	ater Removed:	1.8	1-	Gallons
Stabilized? Yes No No Comments:	Amount vva	ilei Keliioveu.	1.0		Calibria

Exceptions to Protocol:

 $\phi_{pp}^{\bullet,\infty}$

Groundwater Asses	ssment			Site:	Otte					
Sampling Personnel:	6			Facility ID: SW-211						
Jest	Lathurne	^		Date: 1900tile						
764	NO THINK	1				746	7/			
		_		Unique Station ID: C (**LC						
Well Condition										
	YES No			Protective F			No			
Well Labeled?	Yes_ No			State ID Ta			Alo			
3 3	Yes No	-		Grout Seal	intact? Yes	_	No			
Repairs Necessary:										
Well Information	3 40 4.									
Vell Depth:	78,40	_		Well Casing	Elevation:		1271.562			
Constructed Depth:	78.42	_		Static Water	r Elevation:		1303.53			
Casing Diameter:	2"			Previous St	atic:		1203,40			
	10	20.		Water Leve	After Sample	e:	68,16			
Vater Level Before Puro	ie: 10 %						- Are			
	-	Gallons		Measureme	nt Method:	Elec.	WL) Steel Tape			
Well Volume: \b	9	Gallons		Measureme	ent Method:	Elec.	WL Steel Tape			
Well Volume: \.\b\	9	Gallons	Wind: N	Measureme	ent Method: Sky:		1			
Nell Volume: \begin{align*} Neather Conditions:	9 n Temp: 4	Gallons 50	Wind: No			Clou	1			
Nell Volume: \.\b\ Sampling Information Veather Conditions: Sampling Method:	9 Temp: 4	Gallons		w-1D	Sky:	Clou	1			
Nell Volume: \b\column{\rmsqrt} Neather Conditions: Sampling Method: Dedicated Equipment: (9 Temp: \u00e4 Grundfos	Gallons 50		W∽ID Whale Pumping R	Sky: Grab Other	Clou	gpm			
Vell Volume: L. Le Sampling Information Veather Conditions: Sampling Method: Dedicated Equipment: (Vell Purged Dry?	9 Temp: 4	Gallons 50		W-ID Whale Pumping Ra Time Pump	Sky: Grab Other: ate:	C/o	gpm am (pm)			
Nell Volume: \b\column{\chick} Sampling Information Neather Conditions: Sampling Method: Dedicated Equipment: (Nell Purged Dry? Time Purged Dry?	Temp: 4 Grundfos Yes No Yes No	Gallons Bladder SS/T		Whale Pumping Rating Pump Time Pump	Sky: Grab Other ate: 2	C/ou 5 6 13 1634	gpm am (pm)			
Nell Volume: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No Yes No Yes No	Gallons Bladder SS/T	Disp. Baller	W - I D Whale Pumping Ra Time Pump Time of Sar Sample EH	Sky: Grab Other ate: 2 Began: 1 mpling: 36	C/ou 5 6 13 1634	gpm am (pm am (pm)			
Nell Volume: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No Yes No	Gallons Bladder SS/T		W - I D Whale Pumping Ra Time Pump Time of Sar Sample EH	Sky: Grab Other ate: 2	C/ou 5 6 13 1634	gpm am (pm)			
Nell Volume: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No Yes No Yes No	Gallons Bladder SS/T ID:	Disp. Baller	Whale Pumping Ratime Pump Time of Sar Sample EH	Sky: Grab Other ate: 2 Began: 1 mpling: 36	C/00 5 6 13 1634 2,5	gpm am (pm am (pm)			
Aveil Volume: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No Yes No Yes No General: 0	Gallons Bladder SS/T ID:	Disp. Baller Color: NO	Whale Pumping Ratime Pump Time of Sar Sample EH Phase Turbidity NTU	Sky: Grab Other ate: 2 Began: 1 mpling: 3	C/ou 5 (e 13 1634 2,5	gpm am (pm am (pm)			
Neather Conditions: Sampling Information Neather Conditions: Sampling Method: Dedicated Equipment: Nell Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: 4 Grundfos Yes No Yes No Yes No General: M Specific Cond.	Gallons Bladder SS/T ID: Temp CC	Color: NO	Whale Pumping Ratime Pump Time of Sar Sample EH Phase Turbidity NTU	Sky: Grab Other ate: 2 Began: 1 mpling: 3 Ge: NONE	C/00 5 6 13 1634 2,5	gpm am (pm) am (pm)			
Aveil Volume: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No Yes No Yes No Specific Cond. 912	Gallons SO Bladder SS/T ID: Core Temp OC SS/S9	Color: NO	W-1D Whale Pumping Ratine Pump Time of Sar Sample EH Phase Turbidity NTU 10.2	Sky: Grab Other ate: 2 Began: mpling: : 36 ee: None Galions Removed	C/oc 5 (e 13 (e 34 e 5 seq	gpm am (pm) am (pm)			
Nell Volume: \\ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Temp: 4 Grundfos Yes No	Gallons SO Bladder SS/T ID: Temp OC R 89	Color: NO D. O. mg/L 1,52	W-1D Whale Pumping Ratine Pump Time of Sar Sample EH Phase Turbidity NTU 10.2	Sky: Grab Other ate: 2 Began: 1 mpling: 36 Gallons Removed 175 3,56	C/oc 5 (e 13 1634 2:5 SEQ #	gpm am (pm) am (pm)			
Nell Volume: 1, L. Sampling Information Neather Conditions: Sampling Method: Dedicated Equipment: (Nell Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time pH 1620 697 1627 694	Temp: 4 Grundfos Yes No Yes No Yes No Specific Cond. 912	Gallons SO Bladder SS/T ID: Core Temp OC SS/S9	Color: NO	Whale Pumping Ratime Pump Time of Sar Sample EH Phase Turbidity NTU	Sky: Grab Other ate: 2 Began: mpling: : 36 ee: None Galions Removed	C/ou 5 (e 13 No 34 2,5 SEQ #	gpm am (pm) am (pm)			
Nell Volume: 1, b. Sampling Information Neather Conditions: Sampling Method: Dedicated Equipment: (Nell Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 7 Time pH 1620 697 1627 694	Temp: 4 Grundfos Yes No	Gallons SO Bladder SS/T ID: Temp OC R 89	Color: NO D. O. mg/L 1,52	W-1D Whale Pumping Ratine Pump Time of Sar Sample EH Phase Turbidity NTU 10.2	Sky: Grab Other ate: 2 Began: 1 mpling: 36 Gallons Removed 175 3,56	C/ou 5 (e 13 No 34 2,5 SEQ #	gpm am (pm) am (pm)			

Exceptions to Protocol:

New Ulm, MN 56073

Groundwater Assessment	Site:	Otter Tail	Power Co./ Hoot Lake				
Sampling Personnel:	Facility ID:	Facility ID: SW-211					
Jeff Hothman	Date: 19	Date: 19 DCT 16					
	Unique Statio	n ID: 806	341				
	Sample ID:	S-10R					
Well Condition Well Locked? Yes No	Protective Po	sts? (Yes)	No				
Well Labeled? Yes No	State ID Tag?	Yes	No				
Casing Straight? Yes No	Grout Seal In	tact? Yes	No				
Repairs Necessary:							
Well Information							
Well Depth: 80 ほね	Well Casing E	Elevation:	NA				
Constructed Depth:	Static Water I	Elevation:					
Casing Diameter: 2"	Previous Stat	ic:	4				
Water Level Before Purge: '72,12	Water Level A	After Sample:	72.13				
Well Volume: Gallon	Measurement	Method: El	ec. WLI Steel Tape				
Sampling Information							
Weather Conditions: Temp: 450	Wind: NWO-10	Sky: C	loudy				
Sampling Method: Grundfos Bladder	T) Disp. Bailer Whale	Grab Other:					
Dedicated Equipment: Yes No	Pumping Rate	0.25	gpm				
Well Purged Dry? Yes (No)	Time Pump B	egan: \513	(1). am / ஹ				
Time Purged Dry?	Time of Samp	ling: 155	1 am /(pm)				
Duplicate Sample? Yes No ID:	Sample EH:	-62,	3				
Sample Appearance: General: 🖒 🖙	Color: NONC_ Phase:	NONE	Odor: NONE				
& Specific Temp	D. O. Turbidity	Gallons SE	Q				
Time pH Cond. OC		Removed #	Comments:				
1527 6.87. 864. 8.8	1,03 30.4	1.5					
1533 6.86 866 8.8	0.90 21.4	S.D 2					
1539 6,85 867 8.9		4.5 3					
1545 6.83 869 85		Le. O 4					
1551 (2.83 869 8.		45 5					
Stabilized? Yes No	Amount Water Removed:	7.5	Gallons				
Comments:							

Exceptions to Protocol:

Groundwater Assessment		Site:	Otte	r Tail Po	wer Co./ Hoot Lake			
Sampling Personnel:		Facility ID:	Facility ID: SW-211					
Jeff Hoffman		Date: 19 Dat 10						
		Unique Station ID:						
		Sample ID:	S-13	3				
Well Condition Well Locked? Well Labeled? Casing Straight? Ves No		Protective State ID Ta Grout Seal	g? Yes)	No No No			
Repairs Necessary: Well Information								
Well Depth: 90 + 27		Well Casin	g Elevation:		1296.423			
Constructed Depth: 90.19			er Elevation:	121	1.61			
Casing Diameter: 2"		Previous S	•		210,64			
Water Level Before Purge: 84.81		Water Leve	Water Level After Sample: 85.60					
Well Volume: 89 Gallo	ns	Measureme	ent Method:	Elec.	WLI Steel Tape			
Sampling Information				4 2	<u> </u>			
Weather Conditions: Temp: 45	Wind: ₩	10-10	Sky:	Clou	Dy			
Sampling Method: Grundfos Bladde	r SSN Disp. Bailer	Whale	Grab Other					
Dedicated Equipment: (Yes) No		Pumping R			gpm			
Well Purged Dry? Yes (No		Time Pump	Began: /	729	am / (m)			
Time Purged Dry?		Time of Sai	F 3 /	41	am / pm			
Duplicate Sample? Yes No ID:		Sample EH	: -71.3					
Sample Appearance: General: Clea	Color: My	ne Phas	se: None	/	Odor: Su Pfiero			
Time pH Specific Cond.	mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:			
1733 6.97 1007 8.	77 1.20	0.0	1	1				
1739 6.85 1004 8.		6-0	2	2				
1741 6.79 1003 8.	11 .91	00	3	3				
				4				
				5				
Stabilized? (Yes) No	Amount W	ater Removed	3		Gallons			
ORDINESUT 100 140	- HIIOGIII W							

Comments:

Exceptions to Protocol:

Groundy	roundwater Assessment					Otte	r Tail Po	wer Co./ Hoot Lake
Sampling F	Personnel:				Facility ID:	SW-	211	
	Dat.	Hatama	^		Date: 19	Det 1	le	
	2011	I ACE TO THE			Unique Stat	tion ID:	30 G	342
					Sample ID:	S-14	R	
Well Cond	dition							
Well Locke		Yes No			Protective F State ID Ta		1	No No
Well Labele Casing Stra		Yes No	4.1		Grout Seal	~	/	No
Repairs Ne		Tesy NO			Cioul Cou	intabt: 10g		110
Well Infor								
Well Depth		11.78			Well Casing	g Elevation:	Λ	A
Constructed	d Depth:				Static Wate	r Elevation:		^
Casing Dia		2"			Previous St	atic:	~	_
	l Before Pur	ge: 79,3°	1		Water Leve	After Sample		19,39
Well Volum	ie: \	اعلة	Gallons		Measureme	ent Method:	Elec.	WL) Steel Tape
Sampling	Informatio		<i>A</i>				0.1	0
Weather Co	onditions:	Temp: 45		Wind: NU	7-10	Sky:	Doc	dy
Sampling M	lethod:	Grundfos (Bladder SS/T	Disp. Bailer	Whale	Grab Other:		,
Dedicated E	Equipment:	Yes No			Pumping Ra			gpm
Well Purger	d Dry?	Yes (No			Time Pump	Began: 10	49	am (pm)
Time Purge	d Dry?	-			Time of Sar	npling: 1	718	am / m
Duplicate S	ample?	Yes No	ID:	_	Sample EH:	100	42,	5
Sample App	earance:	General: C	ear	Color: No	re Phas	e: None		Odor Sulfuro
۵		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	рH	Cond.	°C '	mg/L	NTU	Removed	#	Comments:
1655	7.05	954	8.87	1,23	ソフチ	15	1	
1701	4.95	922	8,86	0,860	2413	3.0	2	
1707	492	914	8.86	87.0	17.8	4.5	3	
17/3	6.91	907	8.84	0.74	13.5	6,0	4	
1718	690	905	8.83	0.75	12.8	7.5	5	
Stabilized?		No)		-	ter Removed:	7,5		Gallons

Comments:

Exceptions to Protocol:



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Page:

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FINAL REPORT COMPLETION DATE: 5Jan 17

Date Reported: 3 Jan 2017

Work Order #: 31-0617 Account #: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

2 04Jun 17 Field Service Manager/Date Reviewed

03 Jan 2017 Manager/Date Reviewed

03 Jan 17. necon Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 3 Jan 2017 Lab Number: 16-A62797 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 12:06 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv Result	red	Method RL	Method Reference	Da An	te alyz	ed		Analyst
MS Water Digestions					23	Nov	16		JMS
Water Digestions					23	Nov	16		JMS
Radium 226	See Attac	hed			3	Jan	17	8:47	ABL
Radium 228	See Attac			EPA M9320	3	Jan	17	8:48	ABL
oH, Field	7.14	units	1.00	I-1586-85	21	Nov	16	12:06	TJP
oH .	* 7.0	units	1.0	SM 4500 H+B-96	22	Nov	16	10:25	DK
Sulfate	186 @	mg/L	4.0	ASTM D516-02	1	Dec	16	7:51	AKF
Chloride	< 3	mq/L	3	SM 4500 C1 E	1	Dec	16	9:07	KCJ
5 C C C C C C C C C C C C C C C C C C C	< 0.005	ug/L	0.005	EPA 245.7	5				TWB
Mercury	See Narra	The second secon	0.000			1000	177		
and de Matel Discolard	588	mg/L	10	SM 2540 C-97	22	Nov	16	15:25	RC
Solids, Total Dissolved	147.0	mg/L	0.500	SW6010C				13:26	RMV
Calcium	See Narra		0.500	SWOOTOC	-		*4	40.00	****
wind a contract of	0.033 ^	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Lithium			0.005	SW6010C	100.00	7.5 (20.00)	77.67	13:26	RMV
Barium	0.050	mg/L	0.005	SW6010C				13:26	RMV
Cobalt	< 0.005	mg/L		SW6010C				13:26	RMV
Boron	0.236	mg/L	0.100					14:02	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A				14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	,	Dec	TO	14:02	KMB
	@See Narr		21.00	45.404.05	-	100			nun
Beryllium	< 0.25	ug/L	0.05	SW6020A	1	Dec	10	14:02	RMB
VAT - LICEN	@See Narr				2		24	2.44	Gara.
Cadmium	< 0.5 @	ug/L	0.1	SW6020A		Dec		9:10	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A		Dec		9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
	@See Narr	ative							
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A		Dec		9:10	RMV
Selenium	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
77777	@See Narr								
Challium	< 0.5	ug/L	0.1	SW6020A	7	Dec	16	14:02	RMB
THE T T COM	@See Narr		4,473						
Fluoride	0.270	mg/L	0.020	EPA 300.0	23	Nov	16	12:35	RMB

Ri = Reporting Limit



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 3 Jan 2017 Lab Number: 16-A62797 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:06
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received

Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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.

RI = 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:

8 = Due to sample matrix
9 = Due to sample matrix
1 = Due to sample quantity
1 = Due to internal standard response

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

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Report Date: 3 Jan 2017 Lab Number: 16-A62798 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 12:44 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv Result	red	Method RL	Method Reference	Da! An	te alyze	ed		Analyst
	1000				23	Nov	16		JMS
MS Water Digestions						Nov			JMS
Water Digestions		A and						8:48	ABL
Radium 226	See Attac			EPA M9320	3	Jan	17	8:48	ABL
Radium 228	See Attac		1.00	I-1586-85	21	Nov	16	12:44	TJP
pH, Field	7.28	units units	1.0	SM 4500 H+B-96		Nov			DK
H	* 7.2	Control of the Contro	4.0	ASTM D516-02	1	Dec			AKF
Sulfate	150 @	mg/L	3.0	SM 4500 C1 E	1	Dec		9:07	KCJ
Chloride	12.4	mg/L	0.005	EPA 245.7	5	Dec		9:40	TWB
Mercury	< 0.005	ug/L	0.005	EFA 243.		5.00	PR.		
	See Narra	C. Control of the Con	10	SM 2540 C-97	22	Nov	16	15:25	RC
Solids, Total Dissolved	562	mg/L	0.500	SW6010C				13:26	RMV
Calcium	118.0	mg/L	0.500	3460100	~~		77	22022	0,000
	See Narra		0.005	SW6010C	29	Nov	16	13:26	RMV
Lithium	0.025 ^	mg/L		SW6010C				13:26	RMV
Barium	0.043	mg/L	0.005	SW6010C				13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C				13:26	RMV
Boron	0.227	mg/L	0.100					14:02	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A				14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	,	Dec	10	14.02	Turis
	@See Narr		6102		7	Dog	16	14:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	1	Dec	10	14.02	RID
	@See Narr				in.	Dec	16	9:10	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A		Dec			RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	9			14:02	RMB
Lead	< 2.5	ug/L	0.5	SW6020A	/	Dec	10	14:02	RMB
acua	@See Narr	cative		A75642057m			10	9:10	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A		Dec			RMV
Selenium	< 5	ug/L	0.5	SW6020A	9	Dec	10	9:10	RMV
A CA CALLERY	@^See Nar				-	4	20	11:00	DMD
Thallium	< 0.5	ug/L	0.1	SW6020A	7	Dec	16	14:02	RMB
Indition	@See Nari	cative			0.0	2		40.00	nam.
Fluoride	0.230	mq/L	0.020	EPA 300.0	23	Nov	16	12:35	RMB
ETHOLING	(0.000.0)								



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 3 Jan 2017 Lab Number: 16-A62798 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:44
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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



CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-51

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Report Date: 3 Jan 2017 Lab Number: 16-A62799 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:24
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv Result	red	Method RL	Method Reference	Dat Ana	e lyze	d		Analyst
MS Water Digestions					23	Nov	16		JMS
Water Digestions					23	Nov	16		JMS
Radium 226	See Attac	ched			3	Jan	17	8:48	ABL
Radium 228	See Attac			EPA M9320	3	Jan	17	8:48	ABL
pH, Field	7.01	units	1.00	I-1586-85	21	Nov	16	12:24	JLH
pH	* 7.1	units	1.0	SM 4500 H+B-96	22	Nov	16	10:25	DK
Sulfate	83.2 @	mg/L	4.0	ASTM D516-02	1	Dec	16	7:51	AKF
Chloride	17.7	mg/L	3.0	SM 4500 C1 E	1	Dec	16	9:07	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5	Dec	16	9:40	TWB
11800004	See Narra								
Solids, Total Dissolved	474	mg/L	10	SM 2540 C-97	22	Nov	16	15:25	RC
Calcium	120.0	mq/L	0.500	SW6010C	29	Nov	16	13:26	RMV
	See Narra								
Lithium	0.023 ^	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Barium	0.077	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Boron	< 0.1	mq/L	0.1	SW6010C	29	Nov	16	13:26	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
	@See Narr								
Beryllium	< 0.25	ug/L	0.05	SW6020A	7	Dec	16	14:02	RMB
	@See Narr		(3.1.4.9)						
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9	Dec	16	9:10	RMV
Chromium	3.34 @	ug/L	0.50	SW6020A	9	Dec	16	9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
	@See Narr		17.17	. 709/797					
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	9	Dec	16	9:10	RMV
Selenium	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
	@See Narr		2.5						
Thallium	< 0.5	ug/L	0.1	SW6020A	7	Dec	16	14:02	RMB
	@See Narr		2.10	2 10 1 212 2001		TE		1777	100
Fluoride	0.290	mg/L	0.020	EPA 300.0	22	Moss	16	12:35	RMB



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 3 Jan 2017 Lab Number: 16-A62799 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:24
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 3 Jan 2017 Lab Number: 16-A62800 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 13:08 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv Result	red	Method Method Date RL Reference Analyzed			Analyst			
					23	Nov	16		JMS
MS Water Digestions					23	Nov	16		JMS
Water Digestions	See Attac	had			3	Jan	17	8:48	ABL
Radium 226	See Attac			EPA M9320	3	Jan	17	8:49	ABL
Radium 228	6.99	units	1.00	I-1586-85	21	Nov	16	13:08	JLH
H, Field	* 7.1	units	1.0	SM 4500 H+B-96				10:25	DK
oH .	77.8 @	mg/L	4.0	ASTM D516-02	1	Dec	16	7:51	AKF
ulfate	15.5	mg/L	3.0	SM 4500 C1 E	1	Dec	16	9:07	KCJ
hloride	< 0.005	ug/L	0.005	EPA 245.7	5	Dec	16	9:40	TWB
fercury	See Narra		2.450	The state of the s					
ary mire myseratia	468	mg/L	10	SM 2540 C-97	22	Nov	16	15:25	RC
Solids, Total Dissolved	103.0	mg/L	0.500	SW6010C	29	Nov	16	13:26	RMV
Calcium	See Narra		0.000	000200		71.00			
1.74.4	0.019 ^	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Lithium	0.106	mq/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Barium	< 0.005	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Cobalt	< 0.1	mg/L	0.1	SW6010C				13:26	RMV
Boron	< 2.5 @	ug/L	0.5	SW6020A				14:02	RMB
Antimony			0.5	SW6020A				14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SWOOZOA	,	224	60		
	@See Narr		0.05	SW6020A	7	Dec	16	14:02	RMB
seryllium	< 0.25	ug/L	0.03	SWOOZON	,		77	4.000	
	@See Nari		0.1	SW6020A	9	Dec	16	9:10	RMV
Cadmium	< 0.5 @	ug/L	0.5	SW6020A		Dec		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RMV
Chromium	< 2.5 @	ug/L		SW6020A				14:02	RMB
ead	< 2.5	ug/L	0.5	SWEDZOA	,	Dec	10	24.00	
	@See Nari		0.00	SW6020A	Q	Dec	16	9:10	RMV
Molybdenum	2.68 @	ug/L	0.50	7.71.77.77.79.73				14:02	RMB
Selenium	< 2.5	ug/L	0.5	SW6020A	,	Dec	10	14.00	Tuild
	@See Nari		4.4	au (020)	7	Doc	16	14:02	RMB
Thallium	< 0.5	ug/L	0.1	SW6020A	1	Dec	10	14.02	LUMB
A TOTAL CANADA	@See Nari		4 500		00	Marr	16	12:35	RMB
Fluoride	0.220	mg/L	0.020	EPA 300.0	2.3	NOA	10	12:35	NAD

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

= Due to concentration of other analytes

= Due to concentration of other analytes

= Due to internal standard response

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



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 3 Jan 2017 Lab Number: 16-A62800 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 13:08

Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received Result Method

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 sample quantity
! = Due to sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 3 Jan 2017 Lab Number: 16-A62801 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 11:48
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv Result	As Received Result		Method Reference	Da:	te alyze	ed		Analyst
Wa water Discoulings					23	Nov	16		JMS
MS Water Digestions					23	Nov	16		JMS
Water Digestions	See Attac	hed			3	Jan	17	8:49	ABL
Radium 226	See Attac			EPA M9320	3	Jan	17	8:49	ABL
Radium 228	6.98	units	1.00	1-1586-85	21	Nov	16	11:48	JLH
pH, Field	* 7.1	units	1.0	SM 4500 H+B-96	22	Nov	16	10:25	DK
OH	129 0	mg/L	4.0	ASTM D516-02	1	Dec		7:51	AKF
Sulfate			3.0	SM 4500 C1 E	1	Dec		9:07	KCJ
Chloride	12.5	mg/L	0.005	EPA 245.7	5	Dec		9:40	TWB
Mercury	< 0.005	ug/L	0.003	EFA 245.7	~	-			6.405
	See Narra		10	SM 2540 C-97	22	Nov	16	15:25	RC
Solids, Total Dissolved	526	mg/L	0.500	SW6010C				13:26	RMV
Calcium	121.0	mg/L	0.500	3W6010C	20	1400	**	40.40	****
	See Narra		0.005	SW6010C	29	Moss	16	13:26	RMV
Lithium	0.024 ^	mg/L	0.005	SW6010C				13:26	RMV
Barium	0.107	mg/L	0.005	Harris and the second				13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C				13:26	RMV
Boron	< 0.1	mg/L	0.1	SW6010C				14:02	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A					RMV
Arsenic	4.10 @	ug/L	0,50	SW6020A		Dec			RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	/	Dec	10	14:02	RMB
	@See Narr	ative		700010225	0	W-12	10	9:10	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A		Dec			0.00
Chromium	< 2.5 @	ug/L	0.5	SW6020A		Dec		9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
5000	@See Narr	ative					414	4 44	****
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A		Dec		9:10	RMV
Selenium	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
See as the	@See Narr							40.720	at Aut
Thallium	< 0.5	uq/L	0.1	SW6020A	7	Dec	16	14:02	RMB
HIGITIAN	@See Narr								
Fluoride	0.210	mq/L	0.020	EPA 300.0	23	Nov	16	12:35	RMB



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 3 Jan 2017 Lab Number: 16-A62801 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 11:48 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

* 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.



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 3 Jan 2017 Lab Number: 16-A62802 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 13:14 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv	red	Method RL	Method Reference	Da An	te alyz	ed		Analys
MS Water Digestions					23	Nov	16		JMS
Water Digestions					23	Nov	16		JMS
Radium 226	See Attac	ched			3	Jan	17	8:49	ABL
Radium 228	See Attac			EPA M9320	3	Jan	17	8:49	ABL
pH, Field	7.16	units	1.00	I-1586-85	21	Nov	16	13:14	TJP
pH pH	* 7.1	units	1.0	SM 4500 H+B-96	22	Nov	16	10:25	DK
Sulfate	108 6	mg/L	4.0	ASTM D516-02	1	Dec	16	7:51	AKF
Chloride	8.9	mg/L	3.0	SM 4500 C1 E	1	Dec	16	9:07	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5	Dec	16	9:40	TWB
Mercury	See Narra		4,042	2770					
Solids, Total Dissolved	477	mg/L	10	SM 2540 C-97	23	Nov	16	10:30	RC
Calcium	119.0	mg/L	0.500	SW6010C	29	Nov	16	13:26	RMV
Calcium	See Narra		*1215	20020000					
Lithium	0.024 ^	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Barium	0.061	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	29	Nov	16	13:26	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7			14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
Arsenic	@See Narr		9.9	151 5 5 T 5 T 1 T 1 T 1 T 1 T 1 T 1 T 1		10.0			
Beryllium	< 0.25	ug/L	0.05	SW6020A	7	Dec	16	14:02	RMB
Beralliam	@See Narr		0.00			0.4(0)	33	73007	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9	Dec	16	9:10	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A		Dec		9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A				14:02	RMB
Lead	@See Narr		0.0	80.508.40			90	20102	
Malubdanum	< 2.5 @	ug/L	0.5	SW6020A	9	Dec	16	9:10	RMV
Molybdenum	< 2.5	ug/L	0.5	SW6020A				14:02	RMB
Selenium	@See Narr			W		F 7 5	7	77007	10.71
mb at 1 from	< 0.5	ug/L	0.1	SW6020A	7	Dec	16	14:02	RMB
Thallium	@See Narr	Control of the Contro	0.1	50,000,000			77	20020	1977
Maria de	0.260	mg/L	0.020	EPA 300.0	23	Nov	16	12:35	RMB
Fluoride	0.200	mg/ ti	0.020		7.4	21-17			2777

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

8 = Due to sample matrix # = Due to concentration of other analytes

1 = Due to sample quantity # = Due to concentration of other analytes

+ = Due to concentration of other analytes

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



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 3 Jan 2017 Lab Number: 16-A62802 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 13:14
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

As Received Result Method

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 3 Jan 2017 Lab Number: 16-A62803 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 11:42
Sampled By: MVTL FIELD PERSONNEL
Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

	As Receiv	red	Method RL	Method Reference	12.17	te alyz	ed		Analyst
MS Water Digestions					23	Nov	16		JMS
Water Digestions					23	Nov	16		JMS
Radium 226	See Attac	ched			3	Jan	17	8:49	ABL
Radium 228	See Attac			EPA M9320	3	Jan	17	8:49	ABL
pH, Field	7.14	units	1.00	I-1586-85	21	Nov	16	11:42	TJP
рн	* 7.1	units	1.0	SM 4500 H+B-96	22	Nov	16	10:25	DK
Sulfate	132 @	mg/L	4.0	ASTM D516-02	1	Dec	16	7:51	AKF
Chloride	5.1	mg/L	3.0	SM 4500 C1 E	1	Dec	16	9:07	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5	Dec	16	10:36	TWB
	See Narra								
Solids, Total Dissolved	600	mq/L	10	SM 2540 C-97	23	Nov	16	10:30	RC
Calcium	134.0	mq/L	0.500	SW6010C	2	Dec	16	9:36	RMV
Lithium	0.027 ^	mq/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Barium	0.074	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29	Nov	16	13:26	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	29	Nov	16	13:26	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	9	Dec	16	9:10	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	7	Dec	16	14:02	RMB
	@See Narr								
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9	Dec	16	9:10	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	9	Dec	16	9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
	@See Narr	ative							
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	9	Dec	16	9:10	RMV
Selenium	< 2.5	ug/L	0.5	SW6020A	7	Dec	16	14:02	RMB
2.1.00000000000000000000000000000000000	@See Narr	ative							
Thallium	< 0.5	ug/L	0.1	SW6020A	7	Dec	16	14:02	RMB
	@See Narr								
Fluoride	0.240	mg/L	0.020	EPA 300.0	23	Nov	16	12:35	RMB



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Method

RL



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

226

As Received Result Report Date: 3 Jan 2017 Lab Number: 16-A62803 Work Order #: 31-0617 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 11:42 Sampled By: MVTL FIELD PERSONNEL Date Received: 21 Nov 2016 16:46

PO #: 48679

Temp at Receipt: 2.3C

Method Reference

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 concentration of other analytes
= Due to concentration of other analytes
= Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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Date Reported: 3 Jan 2017

Work Order #: 201631-0617 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES: Due to the sample matrix of the spike sample, the matrix spike recovery was outside of acceptance range for calcium for samples 16-A62797 through 16-A62802. Data was reported based on the acceptable recoveries of the laboratory control spike and relative percent difference between the matrix spikes.

The matrix spike recoveries for mercury associated with samples 16-A62797 through 16-A62803 were above the acceptance limits. Only results less than the reporting limit were reported.

The knowns and laboratory control spike were above the acceptance limits for beryllium for samples 16-A62797 through 16-A62803. Data below the reporting limit were reported.

The matrix spike recoveries for beryllium, arsenic, selenium, thallium, and lead were above the acceptance limits for samples 16-A62797, 16-A62799, 16-A62800 and 16-A62802. Data below the reporting limit were reported.

The matrix spike recoveries for beryllium, arsenic, thallium, and lead were above the acceptance limits for sample 16-A62798. Data below the reporting limit were reported.

The matrix spike recoveries for beryllium, selenium, thallium, and lead were above the acceptance limits for samples 16-A62801 and 16-A62803. Data below the reporting limit was reported.

Due to the sample matrix of the spiked sample, the matrix spike duplicate recovery for selenium was outside of acceptance range for sample 16-A62798. Data was reported based on the acceptable recoveries of the blank spike and relative percent difference between the matrix spikes.

No other problems were encountered with these analyses.

MVTL

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Page: 1 of 2

Quality Control Report

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	106	85-115	25.0	16A63072q	< 2.5	30.8	123	75-125	30.8	30.7	123	0.3	10	103	90-110	< 0.5
Arsenic ug/L	25.0 25.0	106 113	85-115 85-115	25.0 25.0	16A63072q 16A63072q	< 2.5 < 2.5	32.7 29.1	131 116	75-125 75-125	32.7 29.1	32.3 29.6	129 118	1.2 1.7	10 10	102 106	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000	102	85-115	1.00	16A62803q	0.074	1.140	107	75-125	1.140	1.040	97	9.2	10	95	90-110	< 0.005
Beryllium ug/L	2.50	131	85-115	2.50	16A63072q	< 0.25	3.40	136	75-125	3.40	3.34	134	1.8	10	120	90-110	< 0.05
Boron mg/L	1.000	102	85-115	1.00	16A62803q	< 0.1	1.180	118	75-125	1.180	1.090	109	7.9	10	98	90-110	< 0.1
Cadmium ug/L	5.00	107	85-115	5.00	16A63072q	< 0.5	5.51	110	75-125	5.51	5.37	107	2.6	10	98	90-110	< 0.1
Calcium mg/L	50.00 50.00 50.00	105 109 107	85-115 85-115 85-115	50.0 50.0 50.0	16A62803q 16A62903q 16A62803q	125.0 14.50 134.0	190.0 67.00 193.0	130 105 118	75-125 75-125 75-125	190.0 67.00 193.0	173.0 68.40 186.0	96 108 104	9.4 2.1 3.7	10 10 10	100 101	90-110 90-110	< 0.5 < 0.5 < 0.5
Chloride mg/L	-	-	-	60.0	16-A63072	80.9	142	102	85-120	142	139	97	2.1	5	100	90-110	< 3
Chromium ug/L	25.0	112	85-115	25.0	16A63072q	< 2.5	24.3	97	75-125	24.3	25.0	100	2.8	10	101	90-110	< 0.5
Cobalt mg/L	1.000	106	85-115	1.00	16A62803q	< 0.005	1.050	105	75-125	1.050	0.969	97	8.0	10	99	90-110	< 0.005
Fluoride mg/L	0.200	105	85-115	0.20 0.20	16-A62802 16-A62737	0.260 0.160	0.440 0.340	90 90	75-125 75-125	0.440 0.340	0.440 0.360	90 100	0.0 5.7	10 10	105	90-110	< 0.02
Lead ug/L	25.0	108	85-115	25.0	16A63072q	< 2.5	32.1	128	75-125	32.1	31.3	125	2.5	10	105	90-110	< 0.5
Lithium mg/L	1.000	104	85-115	1.00	16-A62803	0.027	1.110	108	75-125	1.110	1.020	99	8.5	10	97	90-110	< 0.005
Mercury ug/L	- - - -	- - - -	- - - -	0.10 0.10	16-A62797 16-A63071	< 0.005 < 0.005	0.110 0.112	110 112	67-106 67-106	l .	0.112 0.112	112 112	1.8	9 9	86 112	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0	103	85-115	25.0	16A63072q	41.4	66.6	101	75-125	66.6	66.7	101	0.2	10	98	90-110	< 0.5
pH units	-	-	-	-	-	-	-	-	-	7.1	7.1	-	0.0	2.5	101	90-110	-
Selenium ug/L	25.0 25.0	98 113	85-115 85-115	25.0 25.0	16A63072q 16A63072q	< 2.5 < 5	31.4 31.3	126 125	75-125 75-125		31.9 34.0	128 136	1.6 8.3	10 10	100 109	90-110 90-110	< 0.5 < 0.5

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Page: 2 of 2

Quality Control Report

Lab IDs: 16-A62797 to 16-A62803

Project: HOOT LAKE PLANT CCR

Work Order: 201631-0617

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	10000000	Rec	Known % Rec Limits	Method Blank
Solids, Total Dissolved mg/L			1	4	5	2			*	526 918	512 914	-	2.7	10 10	96 109	85-115 85-115	< 10
	8	*	-	-	i <u>e</u>	-	3	-	92.7	1380	1370		0.7	10	109	63-113	< 10
Sulfate mg/L	9.	-		60.0	16-A62947	64.0	132	113	78-126	132	130	110	1.5	5	103	90-110	< 4
Thallium ug/L	5.00	106	85-115	5.00	16A63072q	< 0.5	6.55	131	75-125	6.55	6.37	127	2.8	10	104	90-110	< 0.1

The arsenic matrix spike recoveries were outside the acceptance limits, see narrative.

The beryllium matrix spike recoveries were outside the acceptance limits, see narrative.

The beryllium LCS recovery was above the acceptance limits, see narrative.

The beryllium known recovery was above the acceptance limit, see narrative.

The calcium matrix spike recovery was above the acceptance limits, see narrative

The lead matrix spike recovery was above the acceptance limits, see narrative.

The selenium matrix spike recoveries were outside the acceptance limits, see narrative.

The thallium matrix spike recoveries were outside the acceptance limits, see narrative.

Approved by:



Date: 12/30/2016

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Hoot Lake Plant

Report ID: S1611425001

Lab Order: S1

S1611425

Samples A62797 S-2A, A62798 S-3A-R, A62799 S-51, A62800 S-52, A62801 S-10R, A62802 S-13, and A62803 S-14R were received on November 28, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Hoot Lake Plant

ClientSample ID: A62797 S-2A

S1611425-001

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 12:06:00 PM

DateReceived:

11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Cammanta

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	12/09/2016 1453 12/09/2016 1453 12/23/2016 455 12/23/2016 455	MB MB WN WN	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

0 Outside the Range of Dilutions

Matrix Effect Х

RL - Reporting Limit

Calculated Value С

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Hoot Lake Plant

Lab ID: ClientSample ID: A62798 S-3A-R

S1611425-002

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 12:44:00 PM

DateReceived:

11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Allalyses	Noodii					-	
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	12/09/2016 1453 12/09/2016 1453 12/23/2016 759 12/23/2016 759	MB MB WN WN

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Ε Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions 0

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Hoot Lake Plant

ClientSample ID: A62799 S-51

S1611425-003

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 12:24:00 PM

DateReceived: 11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	12/12/2016 903 12/12/2016 903 12/24/2016 839 12/24/2016 839	MB MB WN WN	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Ε Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

0 Outside the Range of Dilutions

Х Matrix Effect **RL - Reporting Limit**

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Hoot Lake Plant

Lab ID: ClientSample ID: A62800 S-52

S1611425-004

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 1:08:00 PM

DateReceived: 11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Comments		11-34-		DI.	Method	Date Analyzed/I	nit
Analyses	Result	Units	Qual	RL	Wethod	Date Analyzeun	1111
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/12/2016 903	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/12/2016 903	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/24/2016 1141	WN
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/24/2016 1141	WN

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

0 Outside the Range of Dilutions

Matrix Effect Х

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Hoot Lake Plant

Lab ID: ClientSample ID: A62801 S-10R

S1611425-005

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 11:48:00 AM

DateReceived: 11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total						100	
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/12/2016 903	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/12/2016 903	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/24/2016 1443	WN
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/24/2016 1443	WN

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

0 Outside the Range of Dilutions

Matrix Effect Х

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 7



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Hoot Lake Plant

Lab ID: ClientSample ID: A62802 S-13

S1611425-006

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 1:14:00 PM

DateReceived: 11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/12/2016 903	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/12/2016 903	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	12/24/2016 1746	WN	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/24/2016 1746	WN	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions 0

Matrix Effect Х

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: <u>A</u>

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Hoot Lake Plant

Lab ID:

S1611425-007 ClientSample ID: A62803 S-14R

COC:

WEB

Date Reported

12/30/2016

Report ID

S1611425001

WorkOrder:

S1611425

CollectionDate: 11/21/2016 11:42:00 AM

DateReceived: 11/28/2016 11:35:00 AM

FieldSampler:

Matrix:

Water

Comments									
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init			
Radionuclides - Total Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/12/2016 903	МВ		
Radium 226 Precision (±)	NA ND	pCi/L pCi/L		2	SM 7500 Ra-B Ga-Tech	12/12/2016 903 12/24/2016 2047	MB WN		
Radium 228 Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/24/2016 2047	WN		

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 12/30/2016

Work Order:

S1611425

Report ID: S1611425001

Project:

Hoot Lake Plant

Radium 22	8 by Ga/Tech	Sample Type MBLK			pCi/L			
мв-	405 (12/20/16 10:04)	RunNo: 142088	Prepl		1/16 14:00		hID: 12688	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
<u> </u>	Total Radium 228	ND	1					
мв-	406 (12/23/16 14:28)	RunNo: 142089	Prepl		1/16 14:00		hID: 12689	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
tame.	Total Radium 228	ND	1		0.4			
Radium 22	8 by Ga/Tech	Sample Type LCS			pCi/L			
LCS	S-405 (12/20/16 13:06)	RunNo: 142088	•		1/16 14:00		chID: 12688	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	38	1	40.3		94.9	64.4 - 99.5	
LCS	S-406 (12/23/16 17:29)	RunNo: 142089	Prepl		1/16 14:00		:hID: 12689	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	42	1	40.3		103	63.8 - 119	
Radium 22	8 by Ga/Tech	Sample Type LCSD		Units:	pCi/L			
LCS	SD-405 (12/20/16 16:08)	RunNo: 142088	Prepl	Date: 12/0	1/16 14:00	Bato	hID: 12688	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
<u> </u>	Total Radium 228	40	1	38	4.02	98.8	20	
LCS	SD-406 (12/23/16 20:31)	RunNo: 142089	Prepl	Date: 12/0	1/16 14:00	Bato	:hID: 12689	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Total Radium 228	40	1	42	3.05	100	20	
Radium 22	8 by Ga/Tech	Sample Type MS		Units:	pCi/L	· · · · · · · · · · · · · · · · · · ·		
	11336-003AMS (12/21/16 13:22)	RunNo: 142088	Prepl		1/16 14:00		chID: 12688	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
L	Total Radium 228	63	1	80.6	2	76.2	55 - 113	
Radium 22	8 by Ga/Tech	Sample Type MSD		Units:	pCi/L			,
\$16	i11336-003AMSD (12/21/16 16:24)	RunNo: 142088	Prepl	Date: 12/0	1/16 14:00		hID: 12688	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
L	Total Radium 228	76	1	63	18.6	92.4	30	

Qualifiers:

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



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 12/30/2016

Work Order:

S1611425

Report ID: S1611425001

Project:

Hoot Lake Plant

ct: Hoot Lake	- iant						
Radium 226 in Water -		Sample Type MBLK		Units: pCi/L			
MB-1699 (12/12/16 (9:03)	RunNo: 141709	PrepD	ate: 12/15/16 0:00		chID: 12639	
Ai	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qual
R	adium 226	ND	0.2				
MB-1698 (12/09/16	11:50)	RunNo: 141728	PrepD	ate: 12/05/16 0:00		chID: 12642	
A	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qual
R	adium 226	ND	0.2				
Radium 226 in Water -		Sample Type LCS		Units: pCi/L			
LCS-1699 (12/12/16	09:03)	RunNo: 141709	PrepD	Date: 12/15/16 0:00		chID: 12639	0 1
, A	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qual
R	adium 226	6.5	0.2	5.89	111	67.1 - 122	
LCS-1698 (12/09/16	11:50)	RunNo: 141728	PrepD	Date: 12/05/16 0:00		chID: 12642	
· · · · · · · · · · · · · · · · · · ·	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qual
R	adium 226	5.9	0.2	5.89	100	67.1 - 122	
ladium 226 in Water -		Sample Type LCSD		Units: pCi/L			
LCSD-1699 (12/12/1	LCSD-1699 (12/12/16 09:03)		PrepDate: 12/15/16 0:00			chID: 12639	
'	nalyte	Result	RL	Conc %RPD	%REC	% RPD Limits	Qua
R	adium 226	6.2	0.2	6.5 4.53	106	20	
LCSD-1698 (12/09/1	6 11:50)	RunNo: 141728	PrepD	Date: 12/05/16 0:00		chID: 12642	
1 = '	nalyte	Result	RL	Conc %RPD	%REC	% RPD Limits	Qua
R	adium 226	5.8	0.2	5.9 0.876	99.1	20	
adium 226 in Water -		Sample Type MS		Units: pCi/L			
S1611442-003AMS	(12/12/16 09:03)	RunNo: 141709	PrepD	Date: 12/15/16 0:00		chID: 12639	
B .	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qua
R	adium 226	12.9	0.2	11.8 ND	110	65 - 131	
S1611363-001CMS	(12/09/16 11:50)	RunNo: 141728	PrepD	Date: 12/05/16 0:00		chID: 12642	
- ·	nalyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qua
R	adium 226	14.6	0.2	11.8 4.9	82.3	65 - 131	
Radium 226 in Water -		Sample Type MSD		Units: pCi/L			
S1611442-003AMSI	0 (12/12/16 09:03)	RunNo: 141709	PrepD	Date: 12/15/16 0:00		chID: 12639	_
	nalyte	Result	RL	Conc %RPD	%REC	% RPD Limits	Qua
R	adium 226	12.4	0.2	12.9 4.56	105	20	

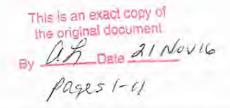
Qualifiers:

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

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



Project Nar	ne:	Otter Tail Po Hoot Lake P		Project	Type:	Hoot Lake Plan	nt			Nan	ne c	f Sa	mpl	lers	: 7	Tin	11.	200	Ace-
Attn:	Paul Vuk P.O. Box	Power Company onich 496 alls, MN 56038-04		Carbon Attn: Address	8.77				1	Name of Samplers: Tim Torter Jett Huthur- Quote Number: Work Order Number: 31-617 Lab Numbers:									
		Sample Inform	mation								E	otti	e T	ype					Analysis
Lab Number	Sample ID	Unique Station ID	Dale	Time	Sample Type	Sample Location	Voc Set	1000 none	1000 HINO3	500 HNO3	Filler? Y	500 HNO3	Filler? Y or M	500H2SO4	1000 Amber Ho	\$00 NaOH 12504	Other: 150 us	Other 150 A.	Analysis Required
A 62797	S2A		ZINOSIO	6 1206	GW		1	1	2	1	n							Ţ.	see attachment
98	S3AR				GW			1	2	1	n		II.						
99	S51			1224	GW		12	1	2	1	n			J.					
462800	S52			1308	GW			1	2	1	n								
01	S10R			1148	GW		[A]	1	2	1	n								
02	S13			1314	GW			1	2	1	n					Ш			
0.3	S14R		V	1142	GW			1	2	1	n								
															1				
Comments:	CCR we Work Or																		

Samples Received By: //, /Dredu Samples Relinquished By: Temp: 2-3 21Nosi6 Date: 21 Nov 16 Time: 1646 Temp: 2.3C Time: /646 Samples Relinquished into: Other: Fridge) Log in Cart Samples Received By: Samples Relinquished By: Temp: Date: Time: Temp: Date: Time: Seal Number(s) - If Used Samplers Delivery: Other: No Seals Intact? Yes Transpo. **Ambient** Tce Other:

Hoot Lake Site CCR Background Sampling

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

All CCR wells should be low flow purges with turbidity <10 NTU

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring

Field Parameters

рН*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pН

Sulfate

Dissolved Solids, Total

1-LiteR

HLP "I" Monitoring Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 - Z - 1000 HNO3

500 HAVOS

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

Groundwater Assessment	Site	e:	Otter Tail Po	ower Co./ Hoot Lake
Sampling Personnel:	Fac	cility ID:	SW-211	
Tim Portry	Dat	te:		
	<u>Uni</u>	ique Station ID:	ZINO	016
	Sar	mple ID:	S-2A	and the second s
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary: Well Information Yes No Yes No Yes No Yes No Yes No Yes No	Sta Gro	ntective Posts? nte ID Tag? out Seal Intact? ωκώ φωω(No No
Well Depth: 79.44	We	ell Casing Eleva	tion:	1273.776
Constructed Depth: 79.63	Sta	ntic Water Eleva	tion:	1196-94
Casing Diameter: 2"	Pre	evious Static:		1197.37
Water Level Before Purge: フ6.33	Wa	ater Level After	Sample:	Below Pour
Well Volume: 0. 95 Gallons	Me	asurement Meth	nod: Ælec	. WLI Steel Tape
Sampling Information				
Weather Conditions: Temp: 39	Wind: 5 Feb	10	Sky: 400	IMI
Sampling Method: Grundfos Bladder SS/T	Disp. Bailer Wha	ale Grab	Other:	
Sampling Method: Grundfos Bladder SS/T Dedicated Equipment: Ves No		ale Grab mping Rate:	Other: ひ.ス	gpm
	Pur		0.7	gpm am / m
Dedicated Equipment: Ves No	Pur Tim	mping Rate:	0.7	
Dedicated Equipment: Ves No Well Purged Dry? Yes No	Pur Tim Tim	mping Rate: ne Pump Began	0.2	an logo
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID:	Pur Tim Tim	mping Rate: ne Pump Began ne of Sampling: mple EH:	0,2 : 1157 1206	an logo
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Leur	Pur Tim Tim Sar Color: 200 - C	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase:	0.7 : 1157 1206 -78.9	am / fom am / fom Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Leur	Pur Tim Sar Color: 100 - C D. O. Tur mg/L NT	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase:	0.7 : 1157 1206 - 78.9 on - C ons SEQ oved #	am / form Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Ueur Time pH Cond. Temp OC II	Pur Tim Sar Color: 108 - C D. O. Tur mg/L 7 7	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase:	0.7 1206 -78.9 ons SEQ oved #	am / form Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Ueur Time pH Cond. Temp Cond. 1200 7.28 863 7.90 1233 7.17 \$86 7.95	Pur Tim Sar Color: No - C D. O. Tur mg/L 7 2.97	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase: Didity U Remo	0.7 1206 7/8.9 ons SEQ oved # 6 1	am / form Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Utur Time pH Cond. 1200 7.20 963 7.95	Pur Tim Sar Color: No - C D. O. Tur mg/L 7 2.97	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase: Didity U Remo	0.7 1206 7/8.9 ons SEQ oved # 6 1	am / form Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Ueur Time pH Cond. Temp Cond. 1200 7.28 863 7.90 1233 7.17 \$86 7.95	Pur Tim Sar Color: No - C D. O. Tur mg/L 7 2.97	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase: Didity U Remo	0.2 1206 7/8.9 ons SEQ oved # 6 1 2 2	am / form Odor: none
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Ueur Time pH Cond. C II 1200 7.28 89.3 7.90 1200 7.17 886 7.95 1200 7.14 887 7.97	Pur Tim Sar Color: No - C D. O. Tur mg/L 7 2.97	mping Rate: ne Pump Began ne of Sampling: mple EH: Phase: Didity Gallo Remo PL 3 PL 3 PL 4 PL 4 PL 5 PL 5 PL 6 PL 6 PL 7 PL 6 PL 7	0.2 1700 1700 7/8.9 oved # 6 1 7 2 7 3 4 5	am / form Odor: none

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

Groundy	ater Asse	essment			Sitę:	Otter	Tail Po	wer Co./ Hoot Lake
Sampling P	ersonnel:				Facility ID:	SW-2	211	
Tim	Portu				Date: 🥳	21NO316		
					Unique Stat	ion ID: 🕜	0746	>/
			_		Sample ID:	S-3A-	-R	
Well Cond	dition							
Well Locke	d?	(Yes No	_		Protective F			No
Well Labele		(Yes No	_		State ID Tag		,	No
Casing Stra	aight?	(Yes No	_		Grout Seal	Intact? Yes		(No)
Repairs Ne	cessary:							
Well Infor	mation							
Well Depth	•	78.40	_		Well Casing	g Elevation:		1271.562
Constructed	d Depth:	78.42	-		Static Wate	r Elevation:		204.85
Casing Dia	meter:	2"	-		Previous St	atic:	12	03.53
Water Leve	l Before Pur	ge: <i>(d</i> 6.7	<u>(</u>		Water Leve	After Sample:	(w	2.01
Well Volum	e:	1.9	Gallons	_	Measureme	nt Method:	Élec.	WLI) Steel Tape
Sampling	Informatio	n						
Weather Co	onditions:	Temp: 31		Wind: 5E	210	Sky:	Som	11/
Sampling M	lethod:	Grundfos	Bladder SS/D	Disp. Bailer	Whale	Grab Other:		
Dedicated I	Equipment:	(Yes) No			Pumping Ra	ate: ひ、こ	5	gpm
Well Purge	d Dry?	Yes (No			Time Pump	Began: ィスス	0	am kpm
Time Purge	d Dry?				Time of San	npling: j こら	14	am / (pm)
Duplicate S	ample?	Yes (No)	_ ID:	·	Sample EH:	- 31.	7	
Sample Ap	pearance:	General: C	teur	Color: w.	بـــر Phas	e: Nore	-	Odor: 90/8000
		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	рН	Cond.	°С	mg/L	NTU	Removed	#	Comments:
1228	7.28	920	8.40	1.88	14.8	2.0	1	
1236	7.24	824	8.40	1.70	12.2	4.0	2	
1244	7.28	826	95.42	1.65	10.7	6.0	3	
1041	1	1 00 -2		1			4	
	·					 	5	
				A 1101	<u> </u>		19	Callana
Stabilized?	Yes	No		Amount Wat	ter Removed:	6.0		Gallons
Comments	s .							

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

Groundwater	Assessment			Site: Otter Tail Power Co./ Hoot Lake				
Sampling Person	nel:			Facility ID:	SW-2	11		
	Te St Hollow	100		Date: 21	Noulle			
				Unique Station	on ID: S	148	30	
		_		Sample ID:	S-51			
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessa	Yes No Yes No Yes No ry:			Protective Po State ID Tag Grout Seal In	? - (Yes)		No No No	
Well Information					_, ,,		4000.0	
Well Depth:	55.60			Well Casing			1286.9	
Constructed Dep	th: '—	_		Static Water	Elevation:		36,99	
Casing Diameter	: 2"	_		Previous Sta	tic:		37.°25	
Water Level Befo	ore Purge: 식약,	91		Water Level	After Sample:	50	10.	
Well Volume:	.9.2	Gallons		Measuremen	t Method:	Elec.	WEI Steel Tape	
Sampling Infor	mation							
Weather Condition	ons: Temp: 30)°	Wind: らん	16	Sky:	<u> 54,</u>	nny	
Sampling Method	: Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:	_		
Dedicated Equip	ment: Yes No	_		Pumping Rat			gpm	
Well Purged Dry	? Yes No	_		Time Pump E		7. OF	-	
Time Purged Dry	?	_		Time of Sam		2:24	am (pm)	
Duplicate Sample	e? Yes (No)	ID:		Sample EH:	~ (P) ~	2		
Sample Appeara	nce: General: SI	ightly Would	vColor: wa n	2 Phase	: Name		Odor: Nove	
ارغ Time pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:	
	94 824	8.12	1,64	303.4)	1		
	98 \$78	8.10	.91	176.3	ť	2		
	03 829	8.02	'33	91,9	3	3		
<u></u>	00 830	8.07	181	80.4	4	4		
<u> </u>	0/ 83/	8.09	18,9	5/1/2 (g	5	5		
Stabilized? Yes	No	<u>.</u>	Amount Wat		ς	•	Gallons	

Comments:

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

office.

Groundwater Assessment		Site:	Otter	Tail Power	Co./ Hoot Lake			
Sampling Personnel:		Facility ID:	SW-2	11				
Jeff Hollow		Date: 21 A	10011	9				
		Unique Station ID:						
		Sample ID:	S-52					
Well Condition Well Locked? Well Labeled? Casing Straight? Well Condition Yes No Yes No		Protective Posts State ID Tag? Grout Seal Intact	Yes	N	lo lo lo			
Repairs Necessary: Well Information			i	•				
Well Depth: 88.30		Well Casing Elev	/ation:	1	286.62			
Constructed Depth:		Static Water Elev		121	6.13			
Casing Diameter: 2"		Previous Static:		13	15,			
Water Level Before Purge: 70.49		Water Level Afte	r Sample:	70	0 = (0 /			
Well Volume: 2,90 Gallons		Measurement Me	ethod:	Elec. WI				
Sampling Information								
Weather Conditions: Temp: ろび	Wind: SE	16	Sky:	Sunn	y			
	Direct Deller	148-1- 01	b Other:		2			
Sampling Method: Grundfos Bladder SS/T	Disp. Bailer	Whale Gral						
Sampling Method: Grundfos Rladder SS/D Dedicated Equipment: Yes No	Disp. Baller	Pumping Rate:		- -> g	pm			
	Disp. Baller		, 3 ²	2132	pm am / pm			
Dedicated Equipment: (Yes) No	Disp. Baller	Pumping Rate:	. , 23 an: 12 g: 13	2132 08	-3			
Dedicated Equipment: (Yes No Well Purged Dry? Yes No	Disp. Baller	Pumping Rate: Time Pump Bega	, 3 ²	2132 08	am / pm			
Dedicated Equipment: (Yes) No Well Purged Dry? Time Purged Dry?	Color: Ma	Pumping Rate: Time Pump Bega Time of Sampling Sample EH:	n: 13 g: 13 - 169	2132 08	am / pm			
Dedicated Equipment: (Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID:		Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gai	n: 13 g: 13 - 169	\$13.5 \$8 \$1.6 \$1.6	am / pm			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class Time pH Specific Temp Cond. CC	Color: Ma	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: In Turbidity Gal NTU Rei	135 g: 13 - 169 Vone	313.2 08 16 SEQ	am / pm am / pm odor: Sulfurau			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class Time pH Cond. CC 12 44 7.00 805 8:00	Color: MB D. O. mg/L 0.70	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gan NTU Rei 3.3	3 3 3 3 3 3 3 3 3 3	SEQ # 0	am / pm am / pm odor: Sulfurau			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class I 2 Time pH Cond. CC I 2 44 7.00 805 8.00 I 2 44 804 8.03	Color: Md3 D. O. mg/L	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Ga NTU Rei 3.3	3 3 3 3 3 3 3 3 3 3	SEQ # 0	am / pm am / pm odor: Sulfurau			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class Time pH Cond. CC 1244 7.00 805 8.00 1246 6.946 804 8.03	D. O. mg/L 0.70	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gan NTU Rei 3.3	3 3 3 3 3 3 3 3 3 3	SEQ # C	am / pm am / pm odor: Sulfurau			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class I 2 Time pH Cond. CC I 2 44 7.00 805 8.00 I 2 44 804 8.03	D. O. mg/L 0.70	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Ga NTU Rei 3.3	3 3 3 3 3 3 3 3 3 3	SEQ # 0	am / pm am / pm odor: Sulfurau			
Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Class Time pH Cond. 12 44 7.00 805 8:00 12 44 7.00 805 8:00	Color: Ma D. O. mg/L O. 70 O. 65 O. 64	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Ga NTU Rei 3.3	3 3 3 3 3 3 3 3 3 3	SEQ # C	am / pm am / pm odor: Sulfurau			

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

Groundwater Ass	essment			Site:	Otter	Tail Pov	wer Co./ Hoot Lake
Sampling Personnel:	-63			Facility ID:	SW-2	211	
Tof	of Hospin	∂àr∕		Date: 2	1 NoviL	þ	
		(Unique Stati	on ID: 🖇 (1634	1
		-		Sample ID:	S-10I	₹	
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Yes No Yes No Yes No	-		Protective P State ID Tag Grout Seal I	? Yes		No No No
Well Information							_
Well Depth:	80,60	<u>}</u>		Well Casing	Elevation:	N	14
Constructed Depth:	~	-		Static Water	Elevation:		
Casing Diameter:	2"	-		Previous Sta	atic:	-54	J
Water Level Before Pu	rge: 72	119		Water Level	After Sample	: '~	72,20
Well Volume:	,37	Gallons	_	Measureme	nt Method: <	Elec.	WLI) Steel Tape
Sampling Information				i e			
Weather Conditions:	Temp: `ろぐ)	Wind: 32	= 1 Ca		<u>Synn</u>	<i>y</i>
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment:	Yes No	-		Pumping Ra			gpm
Well Purged Dry?	Yes (No	-		Time Pump		1:18	(am)/ pm
Time Purged Dry?		-		Time of Sam		148	am / pm
Duplicate Sample?		_ID:	1	Sample EH:	,		
Sample Appearance:	General: S1	ichtlyclong	DGolor: No	n.e Phase	e: NORQ		Odor: NONE
(a	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH	Cond.	o _C	mg/L	NTU	Removed	#	Comments:
11124 4.85	803	8,44	1.45	281,0	1,5	1	
1130 692	841	8,48	1,25	175.3	3.0	2	
1/36 leigh	862	8,50	1,21	147,3	4.5	3	
1142 6.97	864	8.48	1.12	71,2	Levo	4	
1148 6.98	866	8.48	1,04	75.5	75	5	
Stabilized? Yes	Ño		Amount Wa	ter Removed:	7,5		Gallons
							•

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

Groundwater Ass	essment			Site:	Otter	Tail Pov	wer Co./ Hoot Lake	_
Sampling Personnel:				Facility ID:	SW-2	11		_
Tim Porte	w	_	-	Date:	21000/6	2		_
		_		Unique Stati	on ID:			-
		_		Sample ID:	S-13		100	
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Yes No Yes No Yes No	-		Protective Postate ID Tag Grout Seal In	i? Yes)	No No No	:
Well Information	0 - 0							
Well Depth:	90.27	-		Well Casing		***************************************	1296.423	
Constructed Depth:	90.19	_		Static Water			1212,07	•
Casing Diameter:	2"			Previous Sta		12	11.6	
Water Level Before Pu	irge: そりろ	<u>"5"</u>		Water Level	After Sample:			•
Well Volume:	0.97	Gallons	-	Measuremer	nt Method: (Elec. \	WL) Steel Tape	:
Sampling Informati						_		
Weather Conditions:	Temp: 2)	Wind: 51	=6010	Sky: 4	5041	<i>~</i> /	
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:			
Dedicated Equipment:		_		Pumping Ra		25		
Well Purged Dry?	Yes (No)	_		Time Pump		<u>58</u>	am / om	<u>}</u>
Time Purged Dry?		-		Time of Sam		<u> </u>	am / pm	,
Duplicate Sample?	Yes (No	<u> ID: </u>		Sample EH:		<u> </u>		
Sample Appearance:	General: ∠	leur	Color: No	ر Phase	e: nec	·	Odor Gulfuro	J 🖒
Time pH	Specific Cond.	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:	
17.7 777	- ///	8.29	又马工	0	1.0	1		ĺ
1 1504 1 755	1796	1 9.34.7	1 2 9					i
1306 7.21	746	8.37	1.08	0	2.0	2		
1					2.0 3.0	2		
1306 7-21 1310 7.17	748	8.37	1.08	೦				
13010 7-21	748 748	8.37	0.86	ე ე	3,0	3		

Comments:

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

Groundw	ater Asse	ssment			Site:	Otter 1	ail Pow	ver Co./ Hoot Lake
Sampling P	ersonnel:				Facility ID:	SW-21	[1	
Time	Picker				Date:	2, NOSILO		
			-		Unique Station	on ID:		
					Sample ID:	S-14R		
Well Cond Well Locked Well Labele Casing Stra Repairs Ned	d? & ed? C ight? (Yes No Yes No Yes No			Protective Po State ID Tag Grout Seal In		>	No No No
Well Infor	mation							. 4
Well Depth:		87.11			Well Casing		N	<i>14</i>
Constructed	d Depth:				Static Water	Elevation:	/	
Casing Diar	meter:	2"			Previous Sta	tic:	<u> </u>	
Water Leve	l Before Pur	ge: 75.44	2		Water Level	After Sample:		971
Well Volum	e: '	1,4	Gallons	-	Measuremer	t Method: C	Elec. V	NLP Steel Tape
Sampling	Informatio	_			·			
Weather Co	onditions:	Temp: 29		Wind: う	F60/0	Sky:	PULL	/
Sampling M			Bladder SSA	Disp. Bailer	Whale	Grab Other:		
	Equipment: (Pumping Rat		_	gpm
Well Purged		Yes (No)	•		Time Pump E		•	(am) pm
Time Purge		· ·			Time of Sam		_	(am) / pm
Duplicate S		Yes (No)	ID:		Sample EH:		.5	01-6-6
Sample App	pearance:	General: C/	av	Color:we-	2 Phase	· No-C		Odor Follows
Time	рН	Specific Cond.	Temp ^O C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1130	7116	864	8.42	2.04	0	1.5	1	
11360	7.13	860	8.34	1.83	0	3,0	2	
1147	2,14	859	8.39	1.96	0	4.5	3	
1176	,	•					4	
							5	
Stabilized?	Yes	No		Amount Wat	er Removed:	4.5	-	Gallons

Comments:



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FINAL REPORT COMPLETION DATE: 3 Apr

Date Reported: 27 Mar 2017

Work Order #: 31-0068 Account #: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

3144 D Field Service Manager/Date Reviewed

27 Mar 2017

Chemistry Lab Manager/Date Reviewed

tulley for 27 May 2017 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 27 Mar 2017 Lab Number: 17-A6219 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 11:30 Sampled By: MVTL FIELD PERSONNEL

Date Received: 23 Feb 2017 17:12 PO #: 48679

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Da An	te alyz	ed		Analyst
MS Water Digestions					24	Feb	17		JMS
Water Digestions					24	Feb	17		JMS
	SEE ATTAC	HED			23	Mar	17	16:06	ABL
Radium 226	SEE ATTAC			EPA M9320	23	Mar	17	16:06	ABL
Radium 228	6.70	units	1.00	I-1586-85	23	Feb	17	11:30	DGF
pH, Field	* 7.0	units	1.0	SM 4500 H+B-96	24	Feb	17	10:00	DK
рн		mq/L	4.0	ASTM D516-02	9	Mar	17	9:29	KCJ
Sulfate	127 @		3	SM 4500 Cl E	2	7.77		9:29	KCJ
Chloride	< 3	mg/L	0.005	EPA 245.7	24	Feb		9:48	TWB
Mercury	< 0.005	ug/L	10	SM 2540 C-97	24			8:22	RC
Solids, Total Dissolved	602	mg/L		SW6010C	27	953454634		17:06	RMB
Calcium	142.0	mg/L	0.500	SW6010C	27			17:06	RMB
Lithium	0.032	mg/L	0.005	. G 07 (212)(216) 6 (2)	27			17:06	RMB
Barium	0.048	mg/L	0.005	SW6010C	27			17:06	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	27			17:06	RMB
Boron	0.198	mg/L	0.100	SW6010C					RMV
Antimony	< 2.5	ug/L	0.5	SW6020A	2	Mar	TA	13:58	EGAL
* MI NOTICE (M.	@See Narr	ative				12.7			
Arsenic	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
111.00.114.0	@See Nari	ative					. 5	MINGE	2025
Beryllium	< 0.25	ug/L	0.05	SW6020A	2	Mar	17	13:58	RMV
Beryrriam	@See Narr								
Cadmium	< 0.5	ug/L	0.1	SW6020A	2	Mar	17	13:58	RMV
Cadmium	@See Narr								
was to the first of	< 2.5 @	ug/L	0.5	SW6020A	3	Mar	17	9:17	RMV
Chromium	< 0.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Lead	@See Narr		~.~						
MCC Labration	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Molybdenum			0.5	Shoopon					
	@See Narr		0.5	SW6020A	3	Mar	17	9:17	RMV
Selenium	< 5 @^	ug/L		SW6020A				13:58	RMV
Thallium	< 0.5	ug/L	0.1	SWEUZUA	-	Licia			225.4
	@See Narr			777 300 0	22	Enh	17	12:11	RMB
Fluoride	0.250	mg/L	0.020	EPA 300.0	21	reb	+ /	12.11	LWID

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

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



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 27 Mar 2017 Lab Number: 17-A6219 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 11:30 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 27 Mar 2017 Lab Number: 17-A6220 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 12:15 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Da An	Analyst			
Ma Matau Biantiana	-11/ 2/4				24	Feb	17		JMS
MS Water Digestions					24	Feb	17		JMS
Water Digestions Radium 226	SEE ATTA	CHED			23	Mar	17	16:07	ABL
Radium 228	SEE ATTAC			EPA M9320	23	Mar	17	16:07	ABL
	6.91	units	1.00	1-1586-85	23	Feb	17	12:15	DGF
pH, Field	* 7.2	units	1.0	SM 4500 H+B-96	24	Feb	17	10:00	DK
pH	111 @	mg/L	4.0	ASTM D516-02	9	Mar	17	9:29	KCJ
Sulfate Chloride	12.2	mg/L	3.0	SM 4500 C1 E	2	Mar	17	9:29	KCJ
TAYER THE THE	< 0.005	ug/L	0.005	EPA 245.7	24	Feb	17	9:48	TWB
Mercury Solids, Total Dissolved	553	mg/L	10	SM 2540 C-97	24	Feb		8:22	RC
	116.0	mg/L	0.500	SW6010C	27	Feb	17	17:06	RMB
Calcium	0.024	mg/L	0.005	SW6010C	27	Feb	17	17:06	RMB
Lithium	0.044	mg/L	0.005	SW6010C	27	Feb	17	17:06	RMB
Barium	< 0.01 ^		0.005	SW6010C	27	Feb	17	17:06	RMB
Cobalt	0.203	mg/L	0.100	SW6010C	27	Feb	17	17:06	RMB
Boron	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Antimony	@See Nari		0,0	Chileria					
Charles I a	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Arsenic	@See Nar		9.5	77.77					
	< 0.25	ug/L	0.05	SW6020A	2	Mar	17	13:58	RMV
Beryllium	@See Nari		0.05	5400204	- 2	1000			
			0.1	SW6020A	2	Mar	17	13:58	RMV
Cadmium	< 0.5	ug/L	0.1	SWOOZOA	~		7.1		1000
	@See Nari		0.5	SW6020A	3	Mar	17	9:17	RMV
Chromium	< 2.5 @	ug/L		SW6020A				13:58	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	4	MAL	1	15.50	Lua
	@See Nari		0.5	SW6020A	2	Mar	17	13:58	RMV
Molybdenum	< 2.5	ug/L	0.5	SW6020A	4	Mar	+/	13.50	Idi
	@See Nar			GMC0207	2	Mar	17	9:17	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A				13:58	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	4	mar	TI	13.30	rain.
	@See Nari		4 044		22	Cab	17	12:11	RMB
Fluoride	0.210	mg/L	0.020	EPA 300.0	27	reb	TI	12:11	KIND



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 27 Mar 2017 Lab Number: 17-A6220 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 12:15 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 concentration of other analytes

= Due to concentration of other analytes

= Due to internal standard response

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 27 Mar 2017 Lab Number: 17-A6221 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 12:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Recei	ved	Method RL	Method Reference	Dat Ana	e lyzed		Analyst
	State of the state		10.0		24	Feb 1	1	JMS
MS Water Digestions						Feb 1		JMS
Water Digestions	SEE ATTA	ough					16:07	ABL
Radium 226	13 mm 000,700			EPA M9320	-	Mar 1		ABL
Radium 228	SEE ATTA	units	1.00	1-1586-85			7 12:18	JLH
pH, Field	6.93	The second secon	1.0	SM 4500 H+B-96	-		10:00	DK
pH	* 7.2	units	4.0	ASTM D516-02		Mar 1		KCJ
Sulfate	53.9 @	mg/L	3.0	SM 4500 CL E		Mar 1		KCJ
Chloride	16.0	mg/L		EPA 245.7		Feb 1		TWB
Mercury	0.007	ug/L	0.005	SM 2540 C-97		Feb 1		RC
Solids, Total Dissolved	476	mg/L	10	SW 2540 C-97			17:06	RMB
Calcium	126.0	mg/L	0.500	T01.T.T.T.T.T.			17:06	RMB
Lithium	0.025	mg/L	0.005	SW6010C			17:06	RMB
Barium	0.087	mg/L	0.005	SW6010C		B	17:06	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C			[TO 7] T [T [T]	RMB
Boron	< 0.1	mg/L	0.1	SW6010C			17:06	
Antimony	< 2.5	ug/L	0.5	SW6020A	2	Mar 1	13:58	RMV
700 700000000	@See Narr	rative				W. C. 41		all
Arsenic	< 2.5	ug/L	0.5	SW6020A	2	Mar 1	13:58	RMV
ALDONAO	@See Nar:	rative						
Beryllium	< 0.25	ug/L	0.05	SW6020A	2	Mar 1	13:58	RMV
Berlinum	@See Nari							
Cadmium	< 0.5	ug/L	0.1	SW6020A	2	Mar 1	13:58	RMV
Cadmium	@See Nari							
at the state of th	4.08 @	ug/L	0.50	SW6020A	3	Mar 1	9:17	RMV
Chromium	< 2.5	ug/L	0.5	SW6020A	2	Mar 1	13:58	RMV
Lead	@See Nari		0.5	Direction				
Control of the Contro			0.50	SW6020A	2	Mar 17	13:58	RMV
Molybdenum	2.56	ug/L	0.50	SWOOZON	-		22,20	
The state of the s	@See Nari		0 5	SW6020A	3	Mar 1	9:17	RMV
Selenium	< 5 @^	ug/L	0.5	F11 F F F F F F F F F F F F F F F F F F			13:58	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	2	Tat I	13.30	2.4.4
	@See Nari		2 322		22	Dala 15	12:11	RMB
Fluoride	0.270	mg/L	0.020	EPA 300.0	21	rep 1	12:11	RAID



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 27 Mar 2017 Lab Number: 17-A6221 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 23 Feb 2017 12:18
Sampled By: MVTL FIELD PERSONNEL
Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

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Report Date: 27 Mar 2017 Lab Number: 17-A6222 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 13:02 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv	ved	Method RL	Method Reference	Da An	te alyze	ed		Analyst
Na Makan Bi marki sas					24	Feb	17		JMS
MS Water Digestions					24	Feb	17		JMS
Water Digestions	SEE ATTAC	CHED			23	Mar	17	16:07	ABL
Radium 226	SEE ATTAC			EPA M9320	23	Mar	17	16:07	ABL
Radium 228	6.89	units	1.00	1-1586-85	23	Feb	17	13:02	JLH
pH, Field	* 7.2	units	1.0	SM 4500 H+B-96	24	Feb	17	10:00	DK
pH		mg/L	4.0	ASTM D516-02	9	Mar	17	9:29	KCJ
Sulfate	55.1 @		3.0	SM 4500 CL E	2	Mar	17	9:29	KCJ
Chloride	15.0	mg/L	0.005	EPA 245.7	24	Feb		9:48	TWB
Mercury		ug/L	10	SM 2540 C-97	24	Feb		8:22	RC
Solids, Total Dissolved	440	mg/L	0.500	SW6010C	27			17:06	RMB
Calcium	104.0	mg/L	0.005	SW6010C	27			17:06	RMB
Lithium	0.019	mg/L	0.005	SW6010C	27			17:06	RMB
Barium	0.111	mg/L		SW6010C	27			17:06	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	27			17:06	RMB
Boron	< 0.1	mg/L	0.1		2			13:58	RMV
Antimony	< 2.5	ug/L	0.5	SW6020A	4	MAL	1,	13.30	Luny
	@See Nari		2.2		2	Marie	17	10.50	RMV
Arsenic	< 2.5	ug/L	0.5	SW6020A	4	Mar	+1	13:58	EXPLY
	@See Nari	cative		511 528 21		440.00	4.4	15.50	DMG2
Beryllium	< 0.25	ug/L	0.05	SW6020A	2	mar	17	13:58	RMV
Many 1007m	@See Nari	cative			- 2	24	36	4 60 6 60	20000
Cadmium	< 0.5	ug/L	0.1	SW6020A	2	Mar	17	13:58	RMV
Odding din	@See Nari	cative							2014
Chromium	< 2.5 @	ug/L	0.5	SW6020A		Mar			RMV
Lead	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Lead	@See Narr							66 (Clair	
Molybdenum	< 2.5	ug/L	0.5	SW6020A	2	Mar	17	13:58	RMV
Molybdenum	@See Narr		3.75						
ALT LLTIM	< 5 @^	ug/L	0.5	SW6020A		Mar		9:17	RMV
Selenium	< 0.5	ug/L	0.1	SW6020A	2	Mar	17	13:58	RMV
Thallium	@See Narr		212	********					
420 (1974)			0.020	EPA 300.0	27	Feb	17	12:11	RMB
Fluoride	0.210	mg/L	0.020		150	WE GO			

= Due to concentration of other analytes + = Due to internal standard response 1013-M ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 27 Mar 2017 Lab Number: 17-A6222 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 23 Feb 2017 13:02
Sampled By: MVTL FIELD PERSONNEL
Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 internal standard response
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 27 Mar 2017 Lab Number: 17-A6223 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 23 Feb 2017 11:40
Sampled By: MVTL FIELD PERSONNEL
Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyz	ed		Analyst
MS Water Digestions					24 Feb		_	JMS
Water Digestions					24 Feb			JMS
Radium 226	SEE ATTAC	HED			23 Mar	40.00	16:07	ABL
Radium 228	SEE ATTAC			EPA M9320			16:07	ABL
	6.91	units	1.00	I-1586-85	23 Feb	17	11:40	JLH
pH, Field	* 7.1	units	1.0	SM 4500 H+B-96	24 Feb	17	10:00	DK
pH	86.5 @	mq/L	4.0	ASTM D516-02	9 Mar	17	9:29	KCJ
Sulfate	11.3	mg/L	3.0	SM 4500 C1 E	2 Mar	17	9:29	KCJ
Chloride	< 0.005	ug/L	0.005	EPA 245.7	24 Feb	17	9:48	TWB
Mercury	507	mg/L	10	SM 2540 C-97	24 Feb	17	8:22	RC
Solids, Total Dissolved	126.0	mg/L	0.500	SW6010C	27 Feb	17	17:06	RMB
Calcium	0.023	mg/L	0.005	SW6010C			17:06	RMB
Lithium			0.005	SW6010C	27 Feb	17	17:06	RMB
Barium	0.117	mg/L	0.005	SW6010C			17:06	RMB
Cobalt	< 0.01 ^	mg/L	0.1	SW6010C			17:06	RMB
Boron	< 0.1	mg/L	0.5	SW6020A			13:58	RMV
Antimony	< 2.5	ug/L	0.5	SW0020A	2 1101		20100	9251
	@See Narr		0.50	RM60207	2 Max	17	13:58	RMV
Arsenic	5.27	ug/L	0.50	SW6020A	Z Mar		13.30	144
	@See Narr		0.32		a was	17	13:58	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	Z Mai	11	13.30	KHV
A COLUMN TO A COLU	@See Narr		. 0. 5	50.22623	8 66.0	4.77	12.50	TARKET
Cadmium	< 0.5	ug/L	0.1	SW6020A	2 Mar	11	13:58	RMV
	@See Narr	ative		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A 1400	4.00	0.17	Distr
Chromium	3.06 @	ug/L	0.50	SW6020A	3 Mar		9:17	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	2 Mar	17	13:58	RMV
acus.	@See Narr	ative			4 12	53	32.32	6545
Molybdenum	< 2.5	ug/L	0.5	SW6020A	2 Mar	17	13:58	RMV
Morybacham	@See Narr	ative					1.00	
Selenium	< 5 0^	ug/L	0.5	SW6020A	3 Mar		9:17	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	2 Mar	17	13:58	RMV
Inallian	@See Narr							
mi d al-a	0.230	mg/L	0.020	EPA 300.0	27 Feb	17	12:11	RMB
Fluoride	0.230		7,577.7	EDGEOGRAPHY.				



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 27 Mar 2017 Lab Number: 17-A6223 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 11:40 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 27 Mar 2017 Lab Number: 17-A6224 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 12:41 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Da An	te alyze	ed		Analyst
	- 1000				24	Feb	17		JMS
MS Water Digestions					24	Feb	17		JMS
Water Digestions	SEE ATTAC	UPD			23	Mar	17	16:08	ABL
Radium 226	SEE ATTAC			EPA M9320	23	Mar	17	16:08	ABL
Radium 228	6.92	units	1.00	I-1586-85	23	Feb	17	12:41	DGF
pH, Field	* 7.2	units	1.0	SM 4500 H+B-96	24	Feb	17	10:00	DK
рН	70.3 @	mg/L	4.0	ASTM D516-02	9	Mar	17	9:29	KCJ
Sulfate	7.5	mg/L	3.0	SM 4500 C1 E	2	Mar	17	9:29	KCJ
Chloride	< 0.005	ug/L	0.005	EPA 245.7	24	Feb	17	9:48	TWB
Mercury	464	mg/L	10	SM 2540 C-97	24	Feb	17	8:22	RC
Solids, Total Dissolved	118.0	mg/L	0.500	SW6010C	27	Feb	17	17:06	RMB
Calcium	0.024	mg/L	0.005	SW6010C	27	Feb	17	17:06	RMB
Lithium			0.005	SW6010C	27	Feb	17	17:06	RMB
Barium	0.066	mg/L	0.005	SW6010C	27			17:06	RMB
Cobalt	< 0.01 ^	mg/L	0.10	SW6010C	27			17:06	RMB
Boron	< 0.1	mg/L	0.5	SW6020A				13:58	RMV
Antimony	< 2.5	ug/L	0.5	SWOOZOA	~		-	44.44	
	@See Narr		0.5	SW6020A	2	Mar	17	13:58	RMV
Arsenic	< 2.5	ug/L	0.5	SW6020A	-	LIGIL		10,00	
	@See Narr		2 22	********	2	Man	17	13:58	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	- 4	Mar	1	13.50	Idia
45 15 00 0	@See Narr				2		17	13:58	RMV
Cadmium	< 0.5	ug/L	0.1	SW6020A	2	Mar	11	13:30	Idaa
	@See Narr			000000000	2		17	9:17	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A		Mar			RMV
Lead	< 2.5	ug/L	0.5	SW6020A	2	Mar	11	13:58	RMV
	@See Narr	ative		ATTAU YAN	2	20.	4.11	10:50	200.200
Molybdenum	< 2.5	ug/L	0.5	SW6020A	2	Mar	1.1	13:58	RMV
NOLYBeen am	@See Narr	ative			12	22.00			
Selenium	< 5 @^	ug/L	0.5	SW6020A		Mar		9:17	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	2	Mar	17	13:58	RMV
IHALLIUM	@See Narr					400	5.5	20100	3003
Fluoride	0.290	mg/L	0.020	EPA 300.0	27	Feb	17	12:11	RMB
ETHOLING	17:35:7								

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 sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 27 Mar 2017 Lab Number: 17-A6224 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 23 Feb 2017 12:41
Sampled By: MVTL FIELD PERSONNEL
Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 27 Mar 2017 Lab Number: 17-A6225 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 23 Feb 2017 13:28
Sampled By: MVTL FIELD PERSONNEL
Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	ved	Method RL	Method Reference	Date Analy:	ed		Analyst
					24 Feb	17		JMS
					24 Feb	17		JMS
	CEE ATTA	CURD			23 Mai	17	16:08	ABL
T 475 7000 7000 1000 100 100 100 100 100 100				EPA M9320	23 Man	17	16:08	ABL
			1 00		23 Feb	17	13:28	DGF
		See Landson Co. Co.			24 Feb	17	10:00	DK
					9 Mar	17	9:29	KCJ
	Water Digestions 24 Feb 17 17 18 19 19 19 19 19 19 19	9:29	KCJ					
			9:48	TWB				
MS Water Digestions Water Digestions Radium 226 SEE ATTACHED Radium 228 SEE ATTACHED PH. Field 6.94 units 1.00 PH 7.2 units 1.0 Sulfate 93.2 @ mg/L 3.0 Chloride 5.2 mg/L 0.005 Solids, Total Dissolved 561 mg/L 10 Calcium 132.0 mg/L 0.500 Lithium 0.030 mg/L 0.005 Barium 0.078 mg/L 0.005 Barium 0.078 mg/L 0.005 Cobalt 0.01 mg/L 0.1 Antimony 0.25 ug/L 0.5 Esee Narrative Arsenic 2.93 ug/L 0.50 Beryllium 0.25 ug/L 0.50 Cadmium 0.05 ug/L 0.05 Cobalt 0.25 ug/L 0.5 Cobalt 0.5 ug/L 0.5 Cobal			SM 2540 C-97			8:22	RC	
						17:06	RMB	
		711 0 0 0 0 0 0				RMB		
	OF PACT TICLIES VIV				RMB			
				98 10 S T T T T T T T T T T T T T T T T T T				RMB
Cobalt								RMB
								RMV
Antimony			0,5	SW6020A	2 1101	-00	13.30	141
				014500000	2 Max	17	12.58	RMV
Arsenic			0.50	SW6020A	Z Mai	11	13,50	ISLA
			2.12	contract of		12	12:00	RMV
Bervllium			0.05	SW6020A	Z Mai	11	13:56	RMV
	@See Nari	rative					10.00	DIGIT
Cadmium	< 0.5	ug/L	0.1	SW6020A	2 Mar	11	13:58	RMV
	@See Nary	cative			2 (10)		4 4 4	mares
Chromium	< 2.5 @	ug/L		177 ST ST THE TOTAL				RMV
	< 2.5	ug/L	0.5	SW6020A	2 Mar	17	13:58	RMV
beau	@See Nary	cative					32423	0.700
Molyhdenum			0.5	SW6020A	2 Mar	17	13:58	RMV
Morybdenaa								
Colonium			0.5	SW6020A			9:17	RMV
(10) pri mi, m 5 (10) pri 10 (10)				SW6020A	2 Mar	17	13:58	RMV
THATITUM			777					
et			0.020	EPA 300.0	27 Feb	17	12:11	RMB
Fluoride	0.230		7.0000	777777 0007113				



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 27 Mar 2017 Lab Number: 17-A6225 Work Order #: 31-0068 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 23 Feb 2017 13:28 Sampled By: MVTL FIELD PERSONNEL Date Received: 23 Feb 2017 17:12

PO #: 48679

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date

Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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



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



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Date Reported: 27 Mar 2017

Work Order #: 201731-0068 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES:

The internal standards counts associated with beryllium, arsenic, molybdenum, cadmium, antimony, thallium, and lead were outside of acceptance range in the low checks for samples 17-A6219 through 17-A6225. The data was reported based on the acceptable recoveries of all of the analytes in the low checks.

No other problems were encountered with these analyses.



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 3/23/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Hoot Lake

Report ID: S1702327001

Lab Order:

S1702327

Samples 17-A6219 S2A, 17-A6220 S3AR, 17-A6221 S51, 17-A6222 S52, 17-A6223 S10R, 17-A6224 S13, and 17-A6225 S14R were received on February 28, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: *All*

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1702327-001 ClientSample ID: 17-A6219 S2A

COC:

WEB

3/23/2017 Date Reported Report ID

S1702327001

WorkOrder:

S1702327

CollectionDate: 2/23/2017 11:30:00 AM

DateReceived: 2/28/2017 12:26:00 PM

FieldSampler:

DF

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	ND	pCi/L		2	Ga- T ech	03/17/2017 840	МВ
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	03/17/2017 840	МВ

These results apply only to the samples tested.

Qualifiers:

- Analyte detected in the associated Method Blank
- Value above quantitation range
- Н Holding times for preparation or analysis exceeded
- Analyzed by another laboratory 1
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1702327-002 ClientSample ID: 17-A6220 S3AR

COC:

WEB

Report ID

Date Reported 3/23/2017

S1702327001

WorkOrder:

S1702327

CollectionDate: 2/23/2017 12:15:00 PM

FieldSampler: DF

DateReceived: 2/28/2017 12:26:00 PM

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	ND NA ND NA	pCi/L pCi/L pCi/L pCi/L		1	SM 7500 Ra-B SM 7500 Ra-B Ga-Tech Ga-Tech	03/20/2017 1131 03/20/2017 1131 03/17/2017 1144 03/17/2017 1144	МВ МВ МВ МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

1126 N Front St

New Ulm, MN 56073

Ottertail Power Hoot Lake ProjectName:

S1702327-003 Lab ID: ClientSample ID: 17-A6221 S51

COC: **WEB**

3/23/2017 Date Reported S1702327001 Report ID

WorkOrder: S1702327

CollectionDate: 2/23/2017 12:18:00 PM DateReceived: 2/28/2017 12:26:00 PM

DF FieldSampler: Water Matrix:

Comments							
Analyses	Result Units Qual	Qual	RL	Method	Date Analyzed/I	nit	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/20/2017 1131	МВ
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/17/2017 1448	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	03/17/2017 1448	МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Е

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

G Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1702327-004 ClientSample ID: 17-A6222 S52

COC:

WEB

Date Reported

3/23/2017

Report ID

S1702327001

WorkOrder:

S1702327

CollectionDate: 2/23/2017 1:02:00 PM

DateReceived: 2/28/2017 12:26:00 PM

FieldSampler:

DF

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/20/2017 1131	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/20/2017 1131	MB
Radium 228	3.7	pCi/L		2	Ga-Tech	03/19/2017 758	MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	03/19/2017 758	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

G Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: **MVTL Inc**

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Hoot Lake

S1702327-005 ClientSample ID: 17-A6223 S10R

WEB COC:

3/23/2017 Date Reported S1702327001 Report ID

WorkOrder: S1702327

CollectionDate: 2/23/2017 11:40:00 AM DateReceived: 2/28/2017 12:26:00 PM

DF FieldSampler: Water Matrix:

C-----

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1151	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1151	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/19/2017 1102	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	03/19/2017 1102	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

О Outside the Range of Dilutions

Matrix Effect Х

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID: ClientSample ID: 17-A6224 S13

S1702327-006

COC:

WEB

Date Reported 3/23/2017 S1702327001 Report ID

WorkOrder:

S1702327

CollectionDate: 2/23/2017 12:41:00 PM DateReceived: 2/28/2017 12:26:00 PM

FieldSampler: DF Matrix:

Water

Comments					····		
Analyses	Result Units Qual	Qual	RL	Method	Date Analyzed/I	nit	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1151	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1151	МВ
Radium 228	4.9	pCi/L		2	Ga-Tech	03/19/2017 1405	MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	03/19/2017 1405	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1702327-007 ClientSample ID: 17-A6225 S14R

COC:

WEB

Date Reported

3/23/2017

Report ID

S1702327001

WorkOrder:

S1702327

CollectionDate: 2/23/2017 1:28:00 PM DateReceived: 2/28/2017 12:26:00 PM

FieldSampler:

DF

Matrix:

Water

Analyses			RL	Method	Date Analyzed/l	nit	
Radionuclides - Total Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1151	МВ
Radium 226 Precision (±) Radium 228 Radium 228 Precision (±)	NA ND NA	pCi/L pCi/L pCi/L		2	SM 7500 Ra-B Ga-Tech Ga-Tech	03/21/2017 1151 03/19/2017 1709 03/19/2017 1709	MB MB MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect Х

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 3/23/2017

Work Order: S1702327

Report ID: \$1702327001

Project: Ottertail Power Hoot Lake

Radium 228 by Ga/Tech		Sample Typ	e MBLK		Units	: pCi/L			
MB-422 (03/14/17 16:01)			RunNo: 143940	PrepD		8/17 12:00		hID 12935	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		ND	1					
MB-423 (03/18/17 10:24)			RunNo: 144032	PrepD	ate: 03/1	3/17 12:00	Bato	hID 12937	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		ND	1					
Radium 228 by Ga/Tech		Sample Typ	e LCS		Units	: pCi/L			
LCS-422 (03/14/17 19:05)			RunNo: 143940	PrepD		8/17 12:00	-	hID 12935	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		36	1	40.1		89.7	65.9 - 132	
LCS-423 (03/18/17 13:28)			RunNo: 144032	PrepD	ate: 03/1	3/17 12:00	Bato	hID 12937	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		40	1	40.1		100	65.9 - 132	
Radium 228 by Ga/Tech		Sample Typ	e MS		Units	: pCi/L			
MS-422 (03/15/17 01:15)			RunNo: 143940	PrepD	ate: 03/0	8/17 12:00	Bato	hID 12935	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		37	1	40.1	ND	93.0	65.9 - 132	
MS-423 (03/18/17 19:36)			RunNo: 144032	PrepD	ate: 03/1	3/17 12:00	Bato	hID 12937	
Analyte			Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Ra	dium 228		40	1	40.1	ND	99.6	65.9 - 132	
Radium 228 by Ga/Tech		Sample Typ	e MSD		Units	: pCi/L			
MSD-422 (03/15/17 04:20)			RunNo: 143940	PrepD	ate: 03/0	8/17 12:00	Bato	hID 12935	
Analyte			Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Ra	dium 228		43	1	37	13.5	106	20	
MSD-423 (03/18/17 22:42)			RunNo: 144032	PrepD	ate: 03/1	3/17 12:00	Bato	hID 12937	
Analyte			Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Ra	dium 228		43	1	40	6.64	106	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 3/23/2017

Work Order: S1702327

Report ID: S1702327001

Project: Ottertail Power Hoot Lake

Radium 226 in Water -	Sample Type MBLK	Units: pCi/L	
MB-1726 (03/20/17 09:18)	RunNo: 143948	PrepDate: 03/13/17 0:00	BatchID 12943
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Radium 226	ND	0.2	
MB-1727 (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00	BatchID 12952
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Radium 226	ND	0.2	
Radium 226 in Water -	Sample Type LCS	Units: pCi/L	
LCS-1726 (03/20/17 09:18)	RunNo: 143948	PrepDate: 03/13/17 0:00	BatchID 12943
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Radium 226	5.7	0.2 5.89	96.2 67.1 - 122
LCS-1727 (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00	BatchID 12952
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qui
Radium 226	5.8	0.2 5.89	98.8 67.1 - 122
Radium 226 in Water -	Sample Type LCSD	Units: pCi/L	
LCSD-1726 (03/20/17 09:18)	RunNo: 143948	PrepDate: 03/13/17 0:00	BatchID 12943
Analyte	Result	RL Conc %RPD	%REC % RPD Limits Qui
Radium 226	6.4	0.2 5.7 12.3	109 20
LCSD-1727 (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00	BatchID 12952
Analyte	Result	RL Conc %RPD	%REC % RPD Limits Qua
Radium 226	6.6	0.2 5.8 12.4	112 20
Radium 226 in Water -	Sample Type MS	Units: pCi/L	
S1702301-006AMS (03/20/17 09:19)	RunNo: 143948	PrepDate: 03/13/17 0:00	BatchID 12943
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qua
Radium 226	11.8	0.2 11.8 0.5	95.9 65 - 131
S1702327-005AMS (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00	BatchID 12952
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qua
Radium 226	11	1 11.8 ND	91.7 65 - 131

Qualifiers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

MVTL

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

MEMBER ACIL

Page: 1 of 1

Quality Control Report

 Lab IDs: 17-A6219 to 17-A6225
 Project: HOOT LAKE PLANT
 Work Order: 201731-0068

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	100	85-115	25.0	a6224qc	< 2.5	25.5	102	75-125	25.5	25.7	103	0.8	10	97	90-110	< 0.5
Arsenic ug/L	25.0	101	85-115	25.0	a6224qc	< 2.5	26.2	105	75-125	26.2	25.6	102	2.3	10	96	90-110	< 0.5
Barium mg/L	1.000	106	85-115	1.00	17A6120q	< 0.005	1.120	112	75-125	1.120	1.130	113	0.9	10	102	90-110	< 0.005
Beryllium ug/L	2.50	99	85-115	2.50	a6224qc	< 0.25	2.44	98	75-125	2.44	2.39	96	2.1	10	99	90-110	< 0.05
Boron mg/L	1.000	102	85-115	1.00	17A6120q	0.230	1.290	106	75-125	1.290	1.300	107	0.8	10	97	90-110	< 0.1
Cadmium ug/L	5.00	103	85-115	5.00	a6224qc	< 0.5	5.02	100	75-125	5.02	5.15	103	2.6	10	96	90-110	< 0.1
Calcium mg/L	50.00	108	85-115	50.0	17A6120q	58.30	111.0	105	75-125	111.0	112.0	107	0.9	10	99	90-110	< 0.5
Chloride mg/L	-	-	-	60.0	17-A6380	45.5	103	96	85-121	103	99.3	90	3.7	5	95	90-110	< 3
Chromium ug/L	25.0	100	85-115	25.0	17-A6224	< 2.5	23.7	95	75-125	23.7	24.5	98	3.3	10	102	90-110	< 0.5
Cobalt mg/L	1.000	107	85-115	1.00	17A6120q	< 0.01	1.070	107	75-125	1.070	1.070	107	0.0	10	100	90-110	< 0.005
Fluoride mg/L	0.200	105	85-115	0.20	17-A6225	0.250	0.440	95	75-125	0.440	0.440	95	0.0	10	99	90-110	< 0.02
Lead ug/L	25.0	96	85-115	25.0	a6224qc	< 2.5	24.5	98	75-125	24.5	24.6	98	0.4	10	94	90-110	< 0.5
Lithium mg/L	1.000	106	85-115	1.00	A6120qc	0.081	1.220	114	75-125	1.220	1.230	115	0.8	10	103	90-110	< 0.005
Mercury ug/L	-	-	-	0.10	17-A6219	< 0.005	0.083	83	63-111	0.083	0.080	80	3.7	18	89	76-113	< 0.005
Molybdenum ug/L	25.0	99	85-115	25.0	a6224qc	< 2.5	26.0	104	75-125	26.0	26.2	105	0.8	10	97	90-110	< 0.5
Nickel ug/L	25.0	100	85-115	25.0	a6224qc	< 2.5	27.0	108	75-125	27.0	27.2	109	0.7	10	102	90-110	< 0.5
pH units	-	-	-	-		-	-	-	-	7.6	7.6	-	0.0	2.5	100	90-110	-
Selenium ug/L	25.0	100	85-115	25.0	17-A6224	< 5	26.4	106	75-125	26.4	25.6	102	3.1	10	95	90-110	< 0.5
Solids, Total Dissolved mg/L	-	-	_	-	-	i -	-	-	-	561	554	-	1.3	8	97	85-115	< 10
Sulfate mg/L	-	-	-	500	17-A6380	1200	1640	88	74-128	1640	1660	92	1.2	5	111	80-120	< 5
Thallium ug/L	5.00	98	85-115	5.00	a6224qc	< 0.5	5.15	103	75-125	5.15	5.06	101	1.8	10	95	90-110	< 0.1



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 Date 13 Rb17

Pages 1-11

Project Nar		Otter Tail Pov Hoot Lake Pla		Project	Type:	Hoot Lake Plant			Nar	me (of Sa	amp	lers	<u>:</u>	D	松	,	Falseyn Hoffman
Report To:		Power Company		Carbon	Copy:).e	77,		Hollman
Attn: Address: Phone:	Paul Vuko P.O. Box Fergus Fa 218-739-8	496 alls, MN 56038-04	96	Attn: Address	<u>s:</u>				Wo	rk C	Num Order mbe	Nu	mbe	er: 3	31	-0	0	68
		Sample Inform	ation							E	otti	e T	vpe	,		_		Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 HNO3	500 HINO3	Filler? Y	500 HNO3	Filter? Y or A.	500H2SO4	1000 Amber 1	500 NaOH H2SO4	Other: 150 Liz	Other 150	
16219	S2A	1,74.5	238617	1130	GW		1	2	1	n					7		_	see attachment
20	S3AR			125	GW		1	2	1	n					Ξ			
	S51			1218	GW		1	2	1	n								
22	S52			1302	GW		1	2	1	n								
23	S10R			1140	GW		1	2	1	n			9					
24	S13			1241	GW		1	2	1	n								
25	S14R		1	1328	GW		1	2	1	n								
																r		

Samples Relinquis	shed By: 12	m		Samples Received	By: // / 1 1 1 1	Udu)
	eb17	Time: 1712	Temp: O.O	Date: 23 Peb 17		Temp: Q.QL
Samples Relinquis	shed into:	Fridge Lo	og in Cart Other:		7 010	Tremp. U - s -
Samples Relinquis	shed By:			Samples Received	Bv:	1
Date:		Time:	Temp:	Date:	Time:	Temp:
Deliv.	Samplers	Other:		Seal Number(s) - I		Tromp.
Trans	Ambient	(CE)	Other:	Seals Intact?	Yes No	

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring

Field Parameters

pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

рН

Sulfate

Dissolved Solids, Total

1-LiteR

HLP "I" Monitoring Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 ~ Z - 1000 HN03

Joshno J



Hoot Lake Site CCR Background Sampling

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

All CCR wells should be low flow purges with turbidity <10 NTU

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

New Ulm, MN 56073

Groundwat	er Asse	essment			Site:	Otter	Tail Pov	wer Co./ Hoot Lake
Sampling Pers	sonnel:	_			Facility ID:	SW-2	11	
Du	sty F	विवरप्र			Date:	23Feb17		
			-		Unique Stati	on ID:		
			-	N	Sample ID:	S-2A		
Well Conditi Well Locked? Well Labeled? Casing Straigh Repairs Neces	nt?	Yes (No ~	yap does	not fit	Protective Postate ID Tag Grout Seal II	? Yes ntact? (Yes)	imp	No No
Well Informa	ation					•		
Well Depth:	7	9.55	-		Well Casing		10-7	1273.776
Constructed D	epth:	79.63	_		Static Water		197,	716
Casing Diamet	ter:	2"	_		Previous Sta	atic: 1196	6.94	
Water Level B	efore Purg	ge: 76.00	7		Water Level	After Sample:	Bel	low Pump
Well Volume:	0	57	Gallons	_	Measuremer	nt Method:	Elec.	WLLY Steel Tape
Sampling Inf	formatio	n	2-3				A.A. es	
Weather Cond	litions:	Temp: 25	<u> </u>	Wind: ₩Λ	JE @12	Sky:	<u>M</u> estly	Cloudy
Sampling Meth	nod:		Bladder SSPI	Disp. Bailer	Whale	Grab Other:		
Dedicated Equ	ıipment:	Yes No	-		Pumping Ra	8.05-	,	gpm
Well Purged D	ry?	Yes (No	-		Time Pump	/		
Time Purged D	Ory?		_		Time of Sam		· · · · · · · · · · · · · · · · · · ·	@m)/ pm
Duplicate Sam	ple?	Yes No	ID:		Sample EH:	64,0		
Sample Appea	arance:	General: (legs	Color: Nov	re Phase	e: Nore		Odor: Nove
3		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time ph	<u> </u>	Cond.	°C	mg/L	NTU	Removed	#	Comments:
	6.64	1000	8.58	4.65	8.3	0,6	1	
1124 4	6.68	994	8.52	2.54	0,0	1.2	2	
	6.09	992	8.41	2,06	0,0	1.8	3	
	:70	989	8.31	2,05	0,0	2.4	4	
		,					5	
		1						
Stabilized? Ye	.	No		Amount Wa	ter Removed:	2.4		Gallons

Comments:

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

Groundwater Assessment		Site:	Otter	Tail Pov	ver Co./ Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	.11	
Dusty Farasyn		Date:	13Feb17		
		Unique Stati	on ID: 674	1671	
		Sample ID:	S-3A-	R	
Well Condition					
Well Locked? Yes No		Protective Po			No No
Well Labeled? (Fig. No. No. No. No. No. No. No. No. No. No		State ID Tag Grout Seal Ir			(40)
Casing Straight? Yes No		Clour ocarn	itact: 100		<u>(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
Repairs Necessary:					
Well Information			F1		4074 F60
Well Depth: 78.40		Well Casing		007/	1271.562
Constructed Depth: 78.42		Static Water		203,	722
Casing Diameter: 2"		Previous Sta	tic: /20	4.85	
Water Level Before Purge: 67.64		Water Level	After Sample:		7, 90
Well Volume: 1.75 Gallons		Measuremer	t Method:	Elec.	AALI Steel Tape
Sampling Information				. 4	
Weather Conditions: Temp: 28	Wind: N)F @ 12	Sky:	Mo	5the Cloudy
Sampling Method: Grundfos Sladder SSIA	Disp. Bailer	Whale	Grab Other:		· · · · · · · · · · · · · · · · · · ·
Dedicated Equipment: (Fee No		Pumping Ra			gpm
Well Purged Dry? Yes 슚		Time Pump I	3egan: <i> 15º </i>		(a͡m)/ pm
Time Purged Dry?		Time of Sam	pling: 1215	<u></u>	am / (pm)
Duplicate Sample? Yes (No ID:		Sample EH:	2.7		
Sample Appearance: General: Geq	Color: ${\cal N}$	one Phase	: None		Odor: Suffuceur
Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. oc	mg/L	NTU	Removed	#	Comments:
1201 7.03 927 8.52	1.95	9.2	475	1	
1208 6.95 929 8.52	1,90	0.8	3,5	2	
1215 6.91 930 857	1.85	0,0	5.25	3	
				4	
				5	
Challistica d'O Alla	Amount Ma	ter Removed:	5.25	J	Gallons
Stabilized? (1es) No	/Amount vva	tor romoved.			

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

New Ulm, MN 56073

Groundw	ater Asse	essment			Site:	Co./ Hoot Lake		
Sampling P	ersonnel:				Facility ID:	SW-2	11	
		offmar	\		Date: 23	Feb 17		
			-)		Unique Stati	on ID: 81	4830	
		***	-		Sample ID:	S-51		
Well Cond	dition							
Well Locke	d? (Yès No	-		Protective P		<u>C</u> Ń	
Well Labele		(Yes) No	-		State ID Tag Grout Seal I		N N	
Casing Stra Repairs Ne		(Yes) No	-		Glout ocal i	illact: (100)		<u></u>
Well Infor								
Well Depth:		55.60			Well Casing	Elevation:	12	286.9
Constructed			-		Static Water	Elevation:	1230	<u>88.2</u>
Casing Diar		2"	-		Previous Sta	atic:	123	6.99
	l Before Pur	ge: 50. 0	- 2		Water Level	After Sample:	<u>50</u>	
Well Volum			Gallons		Measureme	nt Method:	Elec. WL	Steel Tape
Sampling	Informatio		NA					
Weather Co	onditions:	Temp: 25) ⁸	Wind: N-	10	Sky:	Cloud	<u> 19</u>
Sampling M	lethod:	Grundfos C	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Dedicated E	Equipment: 🗸	Yes No			Pumping Ra		gr gr	om
Well Purge	d Dry?	Yes (No)	_		Time Pump		.58	am pm
Time Purge	d Dry?		-		Time of Sam		7:18	am /(pm)
Duplicate S	ample?	Yes No	ID:		Sample EH:	- 15	9.5	
Sample App	pearance:	General:S	abtha Cloud	Color: gra	y Phase	E MONE	, 0	dor: Su Source
4		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	рН	Cond.	°c	mg/L	NTU	Removed	# C	omments:
1202	6.88	824	7.70	0.97	305.1	J	1	
1206	6.93	836	7.77	0.57	154.2	2	2	
1210	6.94	848	7.79	0.41	73.4	3	3	
1214	6.93	849	7.79	0.40	60,9	4	4	
12 18	6.93	852	7.77	0.37	40.9	5	5	
Stabilized?	-	No		Amount Wa	ter Removed:	5.0	G	allons
Comments								

Exceptions to Protocol:

check-ball in pump was stuck

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073

Groundwater Assessment	Site:	Otter Tail Po	ower Co./ Hoot Lake
Sampling Personnel:	Facility ID:	SW-211	
Jeff Haffman	Date: 23	Feb 17	
	Unique Statio		55
	Sample ID:	S-52	
Well Condition			
Well Locked? Yes No	Protective Po	osts? Yes	No
Well Labeled? Yes No	State ID Tag		No
Casing Straight? (Yes) No	Grout Seal Ir	ntact? (res)	No
Repairs Necessary:		:	
Well Information			
Well Depth: 88.30	Well Casing		1286.62
Constructed Depth:	Static Water	Elevation: \3	.16.04
Casing Diameter: 2"	Previous Sta	tic:	216.13
Water Level Before Purge: 70.58	Water Level	After Sample:	70.67
Well Volume: 2.89 Gallons	Measuremen	t Method: Elec.	WLI) Steel Tape
Sampling Information			
Weather Conditions: Temp: 30	Wind: <i>N</i> - 10	Sky: Clo	udy
Sampling Method: Grundfos Bladder SS/	Disp. Bailer Whale	Grab Other:	
Dedicated Equipment: Yes No	Pumping Rat	e: 0.25	gpm
Well Purged Dry? Yes No	Time Pump E	Began: \aa6	am (pm)
Time Purged Dry?	Time of Sam		am / pm
Duplicate Sample? Yes No ID:	Sample EH:	- 192.5	
Sample Appearance: General: (1)	Color: Phase	None	Odor: Sulfuron
Specific Temp	D. O. Turbidity	Gallons SEQ	
Time pH Cond. OC	mg/L NTU	Removed #	Comments:
12:38 6.94 827 7.97	0.37 4.1	3 1	
12:50 6.90 826 8:00	0.21 1.2	(b) 2	
1	0.16 0.3	9 3	
13:02 6.89 828 2.98	10110 10.3		
		4	
		5	
Stabilized? (Yes No	Amount Water Removed:	9.0	Gallons
Comments:			

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

Groundw	vater Asse	essment			Site:	Otter	Tail Po	wer Co./ Hoot Lake
Sampling P	ersonnel:				Facility ID:	SW-2	211	
	2.22 H	Finan	=		Date: 2	3 Fab 17		
			-		Unique Stati	on ID: 8	<u> </u>	Ц
			_		Sample ID:	S-10I	R	•
Well Cond Well Locked Well Labeled Casing Strat Repairs Ne	d? ed? aight?	Yes No Yes No Yes No	-		Protective P State ID Tag Grout Seal I	ı? Yes		No No No
Well Infor	mation							
Well Depth:	•	80.62	_		Well Casing	Elevation:		NA
Constructed	d Depth:		_		Static Water	Elevation:		
Casing Diar	meter:	2"	_		Previous Sta	ntic:	•	<u> </u>
Water Leve	l Before Pur	ge: フ <i>ℷ</i>	80.		Water Level	After Sample:		72.10
Well Volum	e: (.	39	Gallons		Measuremer	nt Method:	Elec.	WLI Steel Tape
Sampling	Informatio	n						
Weather Co	onditions:	Temp: 🞝 🤉		Wind: /	-10	Sky:	Clou	dy
Sampling M	lethod:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Dedicated E	Equipment: (Yes No	*		Pumping Ra			gpm
Well Purged	d Dry?	Yes (No)	•		Time Pump		10	(ám) pm
Time Purge	d Dry?			_	Time of Sam		40	am / pm
Duplicate S	ample?	Yes (No)	ID:		Sample EH:	17.	7	
Sample App	oearance:	General: 🐧	eat	Color: No	No Phase	NONE		Odor: ND MR
Li Time	рН	Specific Cond.	Temp ^O C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1116	8. L.86	892	8.47	1.05	273.4	1.5	1	
1122	6.90	896	8.37	0.71	141,3	3.0	2	
1/28	6.90	899	8.35	0,61	104.4	4,5	3	
1134	6.90	902	8.36	0.50	48.3	6.0	4	
1140	6.91	904	8.34	0.44	31.7	7.5	5	
Stabilized?		No			ter Removed:	7.5		Gallons

Comments:

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

Groundwater Assessment		Site:	Otter	Tail Pov	wer Co./ Hoot	Lake
Sampling Personnel:		Facility ID:	SW-2	11		
Dusty Farasyn		Date: ລີ	3Feb17			
		Unique Stati	on ID: <i>637</i>	2810		
		Sample ID:	S-13			
Well Condition						
Well Locked? Yes No		Protective P			No	
Well Labeled? (Yes) No		State ID Tag Grout Seal II			No No	
Casing Straight? (Yes No		Grout Sear II	ilaci? (tes		140	
Repairs Necessary:						
Well Information						
Well Depth: 90,27		Well Casing	Elevation:		1296.423	
Constructed Depth: 90.19		Static Water	Elevation:	1210,	573	
Casing Diameter: 2"		Previous Sta	ntic: 1212	07	44.2.000	
Water Level Before Purge: 85,85		Water Level	After Sample:	85.	85	
Well Volume: 0.72 Gallons		Measuremer	nt Method:	Elec. 1	WLP Steel	Tape
Sampling Information				A A	11 01	
Weather Conditions: Temp: 28	Wind: ₩	NEER	Sky:	Mo	stly Gord	<i>y</i>
Sampling Method: Grundfos Bladder SS/T	Disp. Bailer	Whale	Grab Other:			
Dedicated Equipment: (Ces No		Pumping Ra	te: 0,2	<u> </u>	gpm	
Well Purged Dry? Yes 😡		Time Pump I			am /C	pm)
Time Purged Dry?		Time of Sam		<u> </u>	am / 🤇	<u>pm</u>
Duplicate Sample? Yes No ID:		Sample EH:	- 33, <u>3</u>			
Sample Appearance: General: Clean	Color: No	ne Phase	e: None		Odor: None	
Tomp		T	Ia "	Joro		
Specific Temp Time pH Cond. OC	D. O.	Turbidity NTU	Gallons Removed	SEQ #	Comments:	1
	mg/L	INTO	Kemoved	π	Comments.	
100/ 1709 2110 1850	710	0.0	(3.7E	14		
1236 7.02 840 8.50	7.12	0.0	0.75	1		
1738 6.97 843 854	2.07	0.0	150	2		
			 	2 3		
1738 6.97 843 854	2.07	0.0	150	1		
1738 6.97 843 854	2.07	0.0	150	3		
1738 6.97 843 854	1.67	0.0	150	3 4	Gallons	

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

Specific Temp D. O. Turbidity Gallons Removed # Comments:	Groundwater Ass	essment			Site:	Otter	Tail Pow	ver Co.	./ Hoot Lake
Unique Station ID: 30 c 3 4 2 2 2 2 3 2 3 3 3 3	Sampling Personnel:				Facility ID:	SW-2	211		
Unique Station ID: 30 c 3 4 2 2 2 2 3 2 3 3 3 3	Dusty	Falasyn			Date:	23Feb17			
Sample ID: S-14R		7	_			~~	634Z		
Well Locked?			 				R		
Well Labeled?	Well Condition					<i>a</i>			
Casing Straight? Casing Elevation: Maximum Mell Depth: 87.1 Well Casing Elevation: Maximum Mell Depth: Static Water Elevation: Previous Static: Previous Static: Water Level After Sample: 79.22 Water Level Before Purge: 79.15 Water Level After Sample: 79.22 Water Level After Sample: 79.22 Water Conditions: Temp: 28 Wind: N. N. E. E. Sky: Mostly C. busky Sampling Information Weather Conditions: Temp: 28 Wind: N. N. E. E. Sky: Mostly C. busky Sampling Method: Grundfos Gaddog Seri Disp. Bailer Whale Grab Other: Dedicated Equipment: 78 No No No No No No No N			_						-
Repairs Necessary: Well Information Well Depth: \$7.1 Constructed Depth: 2" Water Level Before Purge: 79.15 Well Volume: 1.29 Gallons Sampling Information Weather Conditions: Temp: 2" Wind: NJF CI2 Sky: Modify Chicky Sampling Method: Grundfos Eladde Seri Disp. Baller Whale Grab Other: Dedicated Equipment: As No Well Purged Dry? Yes B ID: Sample EH: -115.0 Sample Appearance: General: Clear Color: Nove Phase: Li. Sed. Odor: Suffriction Time pH Specific Temp Cond. Oc Mg/L NTU Removed # Comments: 1322 G.99 961 7.19 Nove Phase: Li. Sed. Odor: Suffriction Stabilized Yes) No Amount Water Removed: 4.5 Gallons Stabilized Yes) No Amount Water Removed: 4.5 Gallons Well Casing Elevation: NJA Well Casing Elevation: NJA Well Casing Elevation: NJA Static Water Elevation: Devation: NJA Static Water Elevation: Devation: NJA Water Level After Sample: 79.27 Water Level After			-						_
Well Information Well Depth: \$7.1 Well Casing Elevation: N/A Constructed Depth: 2" Static Water Elevation: Previous Static: Water Level Before Purge: 79.15 Water Level After Sample: 79.27 Well Volume: 1.29 Gallons Measurement Method: Elec. WL) Steel Tape Sampling Information Weather Conditions: Temp: 28 Wind: NJF @12 Sky: Mb/Hy Deductor Sampling Method: Grundfos Elec. WL) Steel Tape Dedicated Equipment: 768 No Pumping Rate: 0.35 gpm Time Purged Dry? Yes ID: Sample Eh: 1310 am / pm Duplicate Sample? Yes ID: Sample EH: 155 Odor: Seq. Sample Appearance: General: Cleof. Color: Nove. Phase: U. Sed. Odor: SeQ. Time pH Specific Cond. "Cond. "Cond. "Cond.		Gs 140	-		Glout Seal II	itact: (GS		110	-
Well Casing Elevation: Static Water Elevation: Static Water Elevation: Previous Static: Water Level Before Purge: 79.15 Water Level After Sample: 79.27 Wate									
Previous Static: Water Level Before Purge: 79.15 Water Level After Sample: 79.27 Steel Tape		7:11	_		Well Casing	Elevation:	N	A	
Water Level Before Purge: 79.15 Well Volume: 1.29 Gallons Water Level After Sample: 79.22 Measurement Method: Elec. WLD Steel Tape Measurement Method: Elec. WLD Steel Tape Sampling Information Weather Conditions: Temp: 28 Wind: NNE Cl2 Sky: Mbshly Cbudy Sampling Method: Grundfos Elader Str Disp. Bailer Whale Grab Other: Dedicated Equipment: 78 No Well Purged Dry? Yes Clb Time Purged Dry? Yes Clb ID: Sample EH: -115.0 Sample EH: -115.0 Sample EH: -115.0 Sample EH: -115.0 Time PH Specific Temp Cond. Oc Mg/L NTU Removed # Comments: 1314 7:03 987 8:39 1.74 8:7 1.5 1 1322 6:99 961 8:44 1:39 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 3 2 1329 6:94 948 8:44 1:39 0:0 3 2 Stabilized Yes No Amount Water Removed: 4:5 Gallons	Constructed Depth:		_		Static Water	Elevation:	i		
Well Volume: 1,29 Gallons Measurement Method: Elec. WL) Steel Tape	Casing Diameter:	2"	_		Previous Sta	tic:			
Sampling Information Weather Conditions: Temp: 28 Wind: NNE C 2 Sky: Mostly Chudy Chudy Sampling Method: Grundfos Eadder Seri Disp. Bailer Whale Grab Other: Dedicated Equipment: Wisk No Pumping Rate: O	Water Level Before Pu	rge: 79.15			Water Level	After Sample	: 79.2	<i>22</i>	
Weather Conditions: Temp: 28 Wind: NNE CI2 Sky: Mostly Chudy Sampling Method: Grundfos Eledder Sett Disp. Bailer Whale Grab Other: Dedicated Equipment: MS No Well Purged Dry? Yes B ID: Time Pump Began: 1310 am / MS Time Purged Dry? Time of Sampling: 1328 am / MD Sample Appearance: General: Clear Color: Now Phase: Lt. Sed. Odor: Sulfurcus Cond. Cond. Comma/L NTU Removed # Comments: 1316 7.03 987 8.39 1.74 8.7 1.5 1 1322 6.99 961 8.44 1.39 0.0 3 2 1328 6.94 948 8.44 1.39 0.0 3 2 Stabilized Ms No Amount Water Removed: 4.5 Gallons Stabilized Ms No Amount Water Removed: 4.5 Gallons	Well Volume:	29	Gallons	_	Measuremer	nt Method:	Elec. V	VLD_	Steel Tape
Sampling Method: Grundfos Eladder Str Disp. Bailer Whale Grab Other: Dedicated Equipment: Mes No Well Purged Dry? Yes Wo Time Purged Dry? Duplicate Sample? Yes Wo ID: Sample EH: -115.0 Sample Appearance: General: Clear Color: Nove Phase: Li. Sed. Odor: Sulfurous Dedicated Equipment: Mes No Well Purged Dry? Time Pump Began: 1310 am / Me Sample EH: -115.0 Sample EH: -115.0 Sample EH: -115.0 Sample Appearance: General: Clear Color: Nove Phase: Li. Sed. Odor: Sulfurous Time pH Cond. Oc mg/L NTU Removed # Comments: 1316 7.03 987 8.39 1.74 8.7 1.5 1 1322 6.99 961 8.41 1.48 0.0 3 2 1328 6.94 948 8.44 1.39 0.0 3 2 1328 6.94 948 8.44 1.39 0.0 4.5 3 Stabilized Yes No Amount Water Removed: 4.5 Gallons	Sampling Information								
Dedicated Equipment: MSS No No No No No No No	Weather Conditions:	Temp: 🗟	<u> </u>	Wind: ⋀	NF CIZ	Sky:	Most	<u>ly (</u>	budy_
Time Pump Began: 3 0 am	Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale				
Time Purged Dry? Duplicate Sample? Yes (No ID: Sample EH: -115.0 Sample Appearance: General: Clear Color: Nove Phase: Listed Odor: Sulfurcus Time of Sampling: 1328 am / m Sample EH: -115.0 Sample EH: -115.0 Color: Nove Phase: Listed Odor: Sulfurcus Time pH Cond. Cond. Cond. NTU Removed # Comments: 1316 7:03 987 8:39 1:74 8:7 1:5 1 1322 6:99 961 8:41 1:48 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 4:5 3 Stabilized (7es) No Amount Water Removed: 4:5 Gallons	Dedicated Equipment:	MES No	_		Pumping Rat	te: O) 5	gpm	
Duplicate Sample? Yes 66 ID: Sample EH: - 115.0 Sample Appearance: General: Clear Color: Nove Phase: Lh. Sed. Odor: Sulfurous Time pH Specific Cond. Temp occ mg/L D. O. Turbidity Removed # Comments: SEQ Removed # Comments: Comments: 1316 7:03 987 8:39 1:74 8:7 1:5 1 1322 6:99 961 8:41 1:48 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 4:5 3 Stabilized Yes No Amount Water Removed: 4:5 Gallons	Well Purged Dry?	Yes 🐠	_		Time Pump E	Began: 1 <i>31</i>	<u> </u>		am / 🕮
Sample Appearance: General: Clear Color: Nove Phase: Li, Sed. Odor: Suffice. Time pH Specific Cond. Temp oc Cond. D. O. mg/L Turbidity Removed # Removed # Comments: Comments: 1316 7:03 987 8:39 1:74 8:7 1:5 1 1322 6:99 961 8:41 1:48 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 4:5 3 Stabilized (Ves) No Amount Water Removed: 4:5 Gallons	Time Purged Dry?	•	_		Time of Sam	pling: 1323	8		am / pm
Specific Temp D. O. Turbidity Gallons Removed # Comments:	Duplicate Sample?	Yes 🐠	ID:	_	Sample EH:	-115.0	>		
Time pH Cond. °C mg/L NTU Removed # Comments: 1316 7:03 987 8:39 1:74 8:7 1:5 1 1322 6:99 961 8:44 1:48 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 4:5 3 Stabilized Yes No Amount Water Removed: 4:5 Gallons	Sample Appearance:	General: (Cleas	Color: N	ore Phase	: Lt. Sed		Odor:	Sulfurous
Time pH Cond. °C mg/L NTU Removed # Comments: 1316 7:03 987 8:39 1:74 8:7 1:5 1 1322 6:99 961 8:44 1:48 0:0 3 2 1328 6:94 948 8:44 1:39 0:0 4:5 3 Stabilized Yes No Amount Water Removed: 4:5 Gallons	(D)	Specific	Temp	D. O.	Turbidity	Gallons	SEQ		
1322 6.99 961 8.41 1.48 0.0 3 2 1328 6.94 948 8.44 1.39 0.0 4.5 3 4 4 5 5 Stabilized (78s) No Amount Water Removed: 4.5 Gallons	Time pH	1 '	°c		1	Removed	#	Comn	nents:
1328 6,94 948 8,44 1,39 0,0 4,5 3 4 4 5 5 Stabilized (Yes) No Amount Water Removed: 4,5 Gallons	1316 7.03	987	8.39	174	8,7	1.5	1		
Stabilized Yes No Amount Water Removed: 4 5 Gallons	1322 6.99	961	8.41	1,48	0,0	3	2		
Stabilized Yes No Amount Water Removed: 4 5 Gallons	1328 6.94	948	8,44	1,39	0,0	45	3		
Stabilized Yes No Amount Water Removed: 45 Gallons							4		
							5		
	Stabilized? Yes)	No	March	Amount Wa	ter Removed:	4.5		Gallor	าร
	Comments:								



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



FINAL REPORT COMPLETION DATE:

19 May 17 ah Page:

Date Reported: 9 May 2017

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0135 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Service Manager/Date Reviewed

Chemistry Law Manager/Wate Reviewed

-wed May 7017
16 May 2017
Reviewed 801 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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



Page: 2 of 9

CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 9 May 2017 Lab Number: 17-A11961 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 16:16
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					6 Apr 17	JMS
Water Digestions					6 Apr 17	JMS
Radium 226	SEE ATTACI	HED			2 May 17 16:12	ABL
Radium 228	SEE ATTACI	HED		EPA M9320	2 May 17 16:12	ABL
pH, Field	6.73	units	1,00	I-1586-85	3 Apr 17 16:16	
pH pH	* 7.0	units	1.0	SM 4500 H+ B-2000	6 Apr 17 8:40	
Sulfate	125 @	mg/L	5.0	ASTM D516-07	6 Apr 17 9:50	KCJ
Chloride	< 3	mg/L	3	SM 4500 C1 E	13 Apr 17 7:56	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	19 Apr 17 12:27	RMB
Solids, Total Dissolved	578	mg/L	10	SM 2540 C-97	6 Apr 17 14:35	
Calcium	130.0	mg/L	0.500	SW6010C	12 Apr 17 13:01	RMV
Lithium	0.028	mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Barium	0.040	mg/L	0.005	SW6010C	12 Apr 17 13:01	
Chromium	< 0.01	mg/L	0.01	SW6010C	17 Apr 17 12:27	
Boron	0.161	mg/L	0.100	SW6010C	12 Apr 17 13:01	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 13:25	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 13:25	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	10 Apr 17 13:25	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	10 Apr 17 13:25	
Cobalt	< 2.5 @	ug/L	0.5	SW6020A	19 Apr 17 17:25	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 13:25	
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 13:25	
Selenium	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 13:25	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	20 Apr 17 16:28	
Fluoride	0.230	mg/L	0.020	EPA 300.0	7 Apr 17 17:28	RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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

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

Q = Due to sample matrix
P = Due to concentration of other analytes
Pue to sample quantity
Pue to sample quantity
Pue to internal standard response

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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 9 May 2017 Lab Number: 17-A11962 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 12:06
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions Water Digestions Radium 226 Radium 228 pH, Field pH Sulfate Chloride Mercury Solids, Total Dissolved Calcium Lithium Barium Chromium Boron Antimony Arsenic Beryllium Cadmium Codalt Lead	Result SEE ATTACHED SEE ATTACHED 6.88 units * 7.1 units 112 @ mg/L 12.3 mg/L < 0.005 ug/L 563 mg/L 114.0 mg/L 0.021 mg/L 0.042 mg/L < 0.001 mg/L < 0.190 mg/L < 2.5 @ ug/L < 0.25 @ ug/L < 0.5 @ ug/L < 2.5 @ ug/L	1.00 1.0 5.0 3.0 0.005 10 0.500 0.005 0.005 0.01 0.100 0.5 0.05	Reference EPA M9320 I-1586-85 SM 4500 H+ B-2000 ASTM D516-07 SM 4500 C1 E EPA 245.7 SM 2540 C-97 SW6010C SW6010C SW6010C SW6010C SW6010C SW6010C SW6010C SW6020A		Analyst JMS JMS ABL ABL JLH CEH KCJ AKF RMB RC RMV RMV RMV RMV RMV RMV RMV
Molybdenum Selenium Thallium Fluoride	< 2.5 @ ug/L 4.80 @ ug/L < 0.5 @ ug/L 0.160 mg/L	0.5 0.50 0.1 0.020	SW6020A SW6020A SW6020A EPA 300.0	10 Apr 17 14:24 10 Apr 17 14:24 20 Apr 17 16:28 7 Apr 17 17:28	RMV RMV RMV RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

1

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 9 May 2017 Lab Number: 17-A11963 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 17:20
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				6 Apr 17	JMS
Water Digestions				6 Apr 17	JMS
Radium 226	SEE ATTACHED			2 May 17 16:13	ABL
Radium 228	SEE ATTACHED		EPA M9320	2 May 17 16:13	ABL
pH, Field	6.81 units	1.00	I-1586-85	3 Apr 17 17:20	
рн	* 7.1 units	1.0	SM 4500 H+ B-2000	6 Apr 17 8:40	
Sulfate	52.3 @ mg/L	5.0	ASTM D516-07	6 Apr 17 9:50	
Chloride	16.1 mg/L	3.0	SM 4500 Cl E	13 Apr 17 7:56	
Mercury	< 0.005 ug/L	0.005	EPA 245.7	19 Apr 17 12:27	
Solids, Total Dissolved	467 mg/L	10	SM 2540 C-97	6 Apr 17 14:35	
Calcium	106.0 mg/L	0.500	SW6010C	12 Apr 17 13:01	RMV
-	0.020 mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Lithium	0.059 mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Barium	< 0.01 mg/L	0.01	SW6010C	17 Apr 17 12:27	RMV
Chromium	< 0.1 mg/L	0.1	SW6010C	12 Apr 17 13:01	RMV
Boron	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Antimony	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Arsenic	< 0.25 @ ug/L	0.05	SW6020A	10 Apr 17 14:24	RMV
Beryllium	< 0.5 @ ug/L	0.1	SW6020A	10 Apr 17 14:24	RMV
Cadmium	< 2.5 @ ug/L	0.5	SW6020A	19 Apr 17 17:25	RMV
Cobalt		0.5	SW6020A	10 Apr 17 14:24	
Lead	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Molybdenum	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Selenium	< 2.5 @ ug/L	0.1	SW6020A	20 Apr 17 16:28	
Thallium	< 0.5 @ ug/L	0.020	EPA 300.0	7 Apr 17 17:28	RC
Fluoride	0.220 mg/L	0.020	DEN 300.0	, 252 1, 1,120	

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 9 May 2017 Lab Number: 17-A11964 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 18:02
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				6 Apr 17 6 Apr 17	JMS JMS
Water Digestions	SEE ATTACHED			2 May 17 16:13	ABL
Radium 226			EPA M9320	2 May 17 16:13	ABL
Radium 228	SEE ATTACHED	1.00	I-1586-85	3 Apr 17 18:02	BMW
pH, Field	6.93 units * 7.1 units	1.00	SM 4500 H+ B-2000	6 Apr 17 8:40	CEH
рН		5.0	ASTM D516-07	6 Apr 17 9:50	KCJ
Sulfate	55.2 @ mg/L	3.0	SM 4500 C1 E	13 Apr 17 7:56	AKF
Chloride	14.8 mg/L < 0.005 ug/L	0,005	EPA 245.7	19 Apr 17 12:27	RMB
Mercury		10	SM 2540 C-97	6 Apr 17 14:35	RC
Solids, Total Dissolved	452 mg/L	0.500	SW6010C	12 Apr 17 13:01	RMV
Calcium	99.80 mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Lithium	0.019 mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Barium	0,106 mg/L	0.003	SW6010C	17 Apr 17 12:27	RMV
Chromium	< 0.01 mg/L	0.1	SW6010C	12 Apr 17 13:01	RMV
Boron	< 0.1 mg/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Antimony	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Arsenic	< 2.5 @ ug/L	0.05	SW6020A	10 Apr 17 14:24	RMV
Beryllium	< 0.25 @ ug/L	0.1	SW6020A	10 Apr 17 14:24	RMV
Cadmium	< 0.5 @ ug/L	0.5	SW6020A	19 Apr 17 17:25	RMV
Cobalt	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Lead	< 2.5 @ ug/L		SW6020A	10 Apr 17 14:24	RMV
Molybdenum	3.24 @ ug/L	0.50	SW6020A	10 Apr 17 14:24	RMV
Selenium	< 2.5 @ ug/L	0.5		20 Apr 17 16:28	RMV
Thallium	< 0.5 @ ug/L	0.1	SW6020A	7 Apr 17 17:28	RC
Fluoride	0.160 mg/L	0.020	EPA 300.0	/ Apr 1/ 1/.20	110

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 9 May 2017 Lab Number: 17-A11965 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 14:04
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					6 Apr 17	JMS
Water Digestions					6 Apr 17	JMS
Radium 226	SEE ATTAC	HED			2 May 17 16:13	ABL
Radium 228	SEE ATTAC			EPA M9320	2 May 17 16:13	
pH, Field	6.84	units	1.00	I-1586-85	3 Apr 17 14:04	JLH
pH PH	* 7.1	units	1.0	SM 4500 H+ B-2000	6 Apr 17 8:40	CEH
Sulfate	93.9 @	mg/L	5.0	ASTM D516-07	6 Apr 17 9:50	
Chloride	11.4	mg/L	3.0	SM 4500 Cl E	13 Apr 17 7:56	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	19 Apr 17 12:27	RMB
Solids, Total Dissolved	527	mg/L	10	SM 2540 C-97	6 Apr 17 14:35	RC
Calcium	118.0	mg/L	0.500	SW6010C	12 Apr 17 13:01	RMV
Lithium	0.022	mg/L	0.005	SW6010C	12 Apr 17 13:01	RMV
Barium	0.104	mg/L	0.005	SW6010C	12 Apr 17 13:01	
Chromium	< 0.01	mg/L	0.01	SW6010C	17 Apr 17 12:27	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	12 Apr 17 13:01	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Arsenic	4.60 @	ug/L	0.50	SW6020A	10 Apr 17 14:24	
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	10 Apr 17 14:24	RMV
Cadmium	< 0.5 0	ug/L	0.1	SW6020A	10 Apr 17 14:24	
Cobalt	< 2.5 @	ug/L	0.5	SW6020A	19 Apr 17 17:25	
Lead	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	20 Apr 17 16:28	RMV
Fluoride	0.160	mg/L	0.020	EPA 300.0	7 Apr 17 17:28	RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 9 May 2017 Lab Number: 17-A11966 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 12:34
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				6 Apr 17	JMS
				7 Apr 17	JMS
Water Digestions	SEE ATTACHED			2 May 17 16:13	ABL
Radium 226	SEE ATTACHED		EPA M9320	2 May 17 16:13	ABL
Radium 228	6,93 units	1.00	1-1586-85	3 Apr 17 12:34	JĻĦ
pH, Field	* 7.1 units	1.0	SM 4500 H+ B-2000	6 Apr 17 9:07	CEH
рН	73.0 @ mg/L	5.0	ASTM D516-07	6 Apr 17 10:25	KCJ
Sulfate	7.0 mg/L	3.0	SM 4500 Cl E	13 Apr 17 7:56	AKF
Chloride	< 0.005 ug/L	0.005	EPA 245.7	19 Apr 17 12:27	RMB
Mercury	488 mg/L	10	SM 2540 C-97	6 Apr 17 14:35	RC
Solids, Total Dissolved	112.0 mg/L	0.500	SW6010C	12 Apr 17 16:58	RMV
Calcium	see narrative	01000			
	0.026 mg/L	0.005	SW6010C	12 Apr 17 16:58	RMV
Lithium	0.026 mg/L	0.005	SW6010C	12 Apr 17 16:58	RMV
Barium	< 0.01 mg/L	0.01	SW6010C	17 Apr 17 12:27	RMV
Chromium	< 0.1 mg/L	0.1	SW6010C	12 Apr 17 16:58	RMV
Boron		0.5	SW6020A	10 Apr 17 14:24	RMV
Antimony	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Arsenic	< 2.5 @ ug/L	0.05	SW6020A	10 Apr 17 14:24	RMV
Beryllium	< 0.25 @ ug/L	0.1	SW6020A	10 Apr 17 14:24	RMV
Cadmium	< 0.5 @ ug/L	0.5	SW6020A	19 Apr 17 17:25	RMV
Cobalt	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Lead	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Molybdenum	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Selenium	< 2.5 @ ug/L		SW6020A	20 Apr 17 16:28	RMV
Thallium	< 0.5 @ ug/L	0.1	EPA 300.0	7 Apr 17 17:28	RC
Fluoride	0.180 mg/L	0.020	EFR 300.0		

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 9 May 2017 Lab Number: 17-A11967 Work Order #: 31-0135 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 Apr 2017 13:18
Sampled By: MVTL FIELD PERSONNEL
Date Received: 4 Apr 2017 13:33

PO #: 48679

Temp at Receipt: 1.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions				6 Apr 17	JMS
Water Digestions				7 Apr 17	JMS
Radium 226	SEE ATTACHED			2 May 17 16:14	ABL
Radium 228	SEE ATTACHED		EPA M9320	2 May 17 16:14	ABL
рн, Field	6.85 units	1.00	I-1586-85	3 Apr 17 13:18	JLH
	* 7.1 units	1.0	SM 4500 H+ B-2000	6 Apr 17 9:07	CEH
pH Sulfate	113 @ mg/L	5.0	ASTM D516-07	6 Apr 17 10:25	
Chloride	5.1 mg/L	3.0	SM 4500 Cl E	13 Apr 17 7:56	AKF
	< 0.005 ug/L	0.005	EPA 245.7	19 Apr 17 12:27	
Mercury	582 mg/L	10	SM 2540 C-97	6 Apr 17 14:35	
Solids, Total Dissolved	124.0 mg/L	0.500	SW6010C	12 Apr 17 16:58	RMV
Calcium	see narrative				
= 1 t 1 1	0.029 mg/L	0.005	SW6010C	12 Apr 17 16:58	RMV
Lithium	0.074 mg/L	0.005	SW6010C	12 Apr 17 16:58	RMV
Barium	< 0.01 mg/L	0.01	SW6010C	17 Apr 17 12:27	RMV
Chromium	< 0.1 mg/L	0.1	SW6010C	12 Apr 17 16:58	RMV
Boron	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Antimony	2.94 @ ug/L	0,50	SW6020A	10 Apr 17 14:24	RMV
Arsenic	< 0.25 @ ug/L	0.05	SW6020A	10 Apr 17 14:24	RMV
Beryllium	< 0.5 @ ug/L	0.1	SW6020A	10 Apr 17 14:24	RMV
Cadmium	< 2.5 @ ug/L	0.5	SW6020A	19 Apr 17 17:25	
Cobalt	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Lead	< 2.5 @ ug/L	0.5	SW6020A	10 Apr 17 14:24	RMV
Molybdenum		0.5	SW6020A	10 Apr 17 14:24	RMV
Selenium		0.1	SW6020A	20 Apr 17 16:28	RMV
Thallium	< 0.5 @ ug/L	0.020	EPA 300.0	7 Apr 17 17:28	RC
Fluoride	0.170 mg/L	0.020	BLH 30010	·	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



spikes.

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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INORGANIC AND METALS ANALYSES:
Due to the sample matrix of the spiked sample, the matrix spike duplicate
recovery was outside of acceptance limits for calcium in samples 17-A11966 and
17-A11967. Data was reported based on the acceptable recoveries of the
laboratory control spike and relative percent difference between the matrix

No other problems were encountered with these analyses.

MVTL

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Quality Control Report
Lab IDs: 17-A11961 to 17-A11967 Work Order: 201731-0135 Project: HOOT LAKE PLANT CCR

ab IDS: 17-A11901 to 17-	AIIYOI	FIC	Jecu no	OITAM	TE LITATAL CC	-IX	TYUIR	Jiuci. 2							and the name of		men 157 System Company
Analyte	LCS Spike Amt	LCS Rec		16	Matrix Spike at ID	Matrix # Spike * Orig * Result *	Matrix Spike Result	Matrix Spike Rec	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/	MSD Rec %		MSD/ ® Dup / RPD & L Limit (≤)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0	105 105	85-115 85-115	25.0 25.0	17A11961q 17A11967q	< 2.5 < 2.5	25.9 26.5	104 106	75-125 75-125	25.9 26.5	27.1 27.5	108 110	4.5 3.7	10 10	100 100	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	103 102	85-115 85-115	25.0 25.0	17A11961q 17A11967q	< 2.5 2.94	26.5 29.4	106 106	75-125 75-125	26.5 29.4	27.3 30.0	109 108	3.0 2.0	10 10	98 98	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000 1.000	106 100	85-115 85-115	1.00 1.00	17A11965q 17A11966q	0.104 0.071	1.120 1.130	102 106	75-125 75-125	1.120 1.130	1.100 1.050	100 98	1.8 7.3	10 10	97 99	90-110 90-110	< 0.005 < 0.005
Beryllium ug/L	2.50 2.50	109 108	85-115 85-115		17A11961q 17A11967q	< 0.25 < 0.25	2.63 2.58	105 103	75-125 75-125	2.63 2.58	2.61 2.61	104 104	0.8 1.2	10 10	102 103	90-110 90-110	
Boron mg/L	1.000 1.000	104 94	85-115 85-115	1	17A11965q 17A11966q	< 0.1 < 0.1	1.100 1.120	110 112	75-125 75-125	1.100 1.120	1.100 1.030	110 103	0.0 8.4	10 10	94 97	90-110 90-110	
Cadmium ug/L	5.00 5.00	103 103	85-115 85-115		17A11961q 17A11967q	< 0.5 < 0.5	4.96 5.42	99 108	75-125 75-125	4.96 5.42	5.35 5.31	107 106	7.6 2.1	10 10	98 98	90-110 90-110	ALC:
Calcium mg/L	50.00 50.00	105 97	85-115 85-115		17A11965q 17A11966q	118.0 112.0	163.0 160.0	90 96	75-125 75-125		160.0 149.0	84 74	1.9 7.1	10 10	97 96	90-110 90-110	1
Chloride mg/L	1.		1-	60.0	17-A12092	4.5	61.8	96	85-121	61.8	60.2	93	2.6	5	95	90-110	< 3



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

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Page: 2 of 3

Quality Control Report
Lab IDs: 17-A11961 to 17-A11967

Lab IDs: 17-A11961 to 17-A11967 Project: HOOT LAKE PLANT CCR Work Order: 201731-0135

Analyte	LCS Spike	LGS Rec	LCS % Rec	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
Chromium mg/L	1.000 1.000 1.000	101 96 98	85-115 85-115 85-115	1.00 1.00 1.00	17A11965q 17A11374q 17A11966q	< 0.01 < 0.01 < 0.01	0.964 0.966 0.976	96 97 98	75-125 75-125 75-125	0.964 0.966 0.976	0.963 1.010 1.010	96 101 101	0.1 4.5 3.4	10 10 10	94	90-110	< 0.01 < 0.01 < 0.01
Cobalt ug/L	25.0 25.0	107 106	85-115 85-115	25.0 25.0	17A11961q 17A11967q	<2.5 <2.5	24.3 24.2	97 97	75-125 75-125	24.3 24.2	24.4 24.2	98 97	0.4 0.0	10 10	102	90-110	< 0.5 < 0.5
Fluoride mg/L	-	-	-	0.20	17-A11967	0.170	0.400	115	75-125	0.400	0.400	115	0.0	10	99	90-110	< 0.02
Lead ug/L	25.0 25.0	105 104	85-115 85-115	25.0 25.0	17A11961q 17A11967q	<2.5 <2.5	25.9 26.6	104 106	75-125 75-125	25.9 26.6	26.6 26.9	106 108	2.7 1.1	10 10	99 102	90-110 90-110	< 0.5 < 0.5
Lithium mg/L	1.000	110 102	85-115 85-115	1.00 1.00	17-A11965 17-A11966	0.022 0.026	1.090 1.130	107 110	75-125 75-125		1.050 1.060	103 103	3.7 6.4	10 10	102 102	90-110 90-110	< 0.005 < 0.005
Mercury ug/L	:	:		0.10	17-A11954	< 0.005	0.083	83	63-111	0.083	0.084	84	1.2	18	93	76-113	< 0.005 < 0.005
Molybdenum ug/L	25.0 25.0	99 98	85-115 85-115		17A11961q 17A11967q	< 2.5 < 2.5	25.1 26.7	100 107	75-125 75-125		26.0 27.6	104 110	3.5 3.3	10 10	94 92	90-110 90-110	< 0.5 < 0.5



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Page: 3 of 3

Quality Control Report Lab IDs: 17-A11961 to 17-A11967

ab IDs: 17-A11961 to 17-A11967 Project: HOOT LAKE PLANT CCR Work Order: 201731-0135

Analyte	LCS Spike Amt	LCS Rec %	LCS % % Rec. Limits	Matrix Spike	Matrix Spike ID®	Matrix Spike Orig Result	Matrix	Spike Rec	20 10 to 10	Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
pH units	-	-	-	-	-	2	0	-	1	7.1 7.8	7.0 7.8		1.4 0.0	2.5 2.5	101 101	90-110 90-110	1
Selenium ug/L	25.0 25.0	104 108	85-115 85-115	25.0 25.0	17A11961q 17A11967q	<2.5 <2.5	27.5 28.5	110 114	75-125 75-125	27.5 28.5	27.2 30.1	109 120	1.1 5.5	10 10	102 100	90-110 90-110	< 0.5 < 0.5
Solids, Total Dissolved mg/L	:	-	:	-	-	-	:			574 582	602 575	-	4.8 1.2	8	103	85-115	< 10
Sulfate mg/L	-	-	-	500 500 50.0 50.0	17-A11965 17-A11967 17-A11955 17-A11005	93.9 113 9.7 53.3	584 621 59.4 107	98 102 99 107	74-128 74-128 74-128 74-128	584 621 59.4 107	585 625 58.8 108	98 102 98 109	0.2 0.6 1.0 0.9	5 5 5 5	97 101	80-120 80-120	< 5 < 5
Thallium ug/L	5.00 5.00 5.00	100 106 104	85-115 85-115 85-115	5.00 5.00 5.00	17A12436q 17A11961q 17A11967q	<0.1 <0.5 <0.5	5.19 5.54 5.15	104 111 103	75-125 75-125 75-125	5.19 5.54 5.15	5.39 5.37 5.22	108 107 104	3.8 3.1 1.4	10 10 10	101	90-110	<0.1 <0.1 <0.1

^{***} Due to result < 15 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 4 mg/L.

The calcium matrix spike duplicate recovery was outside the acceptance limits, see narrative.

Approved by:



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 5/1/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Hoot Lake

Report ID: S1704106001

Lab Order: \$1704106

Samples S10R-A11965, S13-A11966, S14R-A11967, S2A-A11961, S3AR-A11962, S51-A11963, and S52-A11964 were received on April 7, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Qualifiers by sample

S1704140-003 - Radium 228 by Ga/Tech/Total Radium 228 - RPD outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID: ClientSample ID: S2A-A11961

S1704106-001

COC:

WEB 31-0135

Date Reported

5/1/2017

Report ID

\$1704106001

WorkOrder:

S1704106

CollectionDate: 4/3/2017 4:16:00 PM

DateReceived: 4/7/2017 11:53:00 AM

FieldSampler:

Matrix:

Water

A-----

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init			
Radionuciides - Total									
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1106	MB		
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	04/26/2017 1106	MB		
Radium 228	ND	pCi/L		2	Ga-Tech	04/27/2017 008	MB		
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/27/2017 008	MB		

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Splke Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: W

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1704106-002 ClientSample ID: S3AR-A11962

COC:

WEB 31-0135

Date Reported

5/1/2017 \$1704106001

WorkOrder:

Report ID

S1704106

CollectionDate: 4/3/2017 12:06:00 PM

DateReceived: 4/7/2017 11:53:00 AM

FieldSampler: Matrix:

Water

Comments

Result	Units	Qual	RL	Method	Date Analyzed/I	nit
ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
ND	pCi/L		2	Ga-Tech	04/27/2017 312	MB
NA	pCi/L			Ga-Tech	04/27/2017 312	MB
	ND NA ND	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L 1 NA pCi/L ND pCi/L 2	ND pCi/L 1 SM 7500 Ra-B NA pCi/L SM 7500 Ra-B ND pCi/L 2 Ga-Tech	ND pCi/L 1 SM 7500 Ra-B 04/26/2017 1534 NA pCi/L SM 7500 Ra-B 04/26/2017 1534 ND pCi/L 2 Ga-Tech 04/27/2017 312

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Hoot Lake

ClientSample ID: S51-A11963

S1704106-003

COC:

WEB 31-0135

Date Reported

5/1/2017

Report ID

S1704106001

WorkOrder:

S1704106

CollectionDate: 4/3/2017 5:20:00 PM

DateReceived: 4/7/2017 11:53:00 AM

FieldSampler:

Matrix: Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit ———
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
Radium 228	ND	pCi/L		2	Ga-Tech	04/27/2017 616	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/27/2017 616	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL
Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1704106-004 ClientSample ID: S52-A11964

COC:

WEB 31-0135

Date Reported 5/1/2017

Report ID

S1704106001

WorkOrder:

S1704106

CollectionDate: 4/3/2017 6:02:00 PM DateReceived: 4/7/2017 11:53:00 AM

FieldSampler:

Matrix:

Water

Result	Units	Qual	RL	Method	Date Analyzed/l	nit
ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
ND	pCi/L		2	Ga-Tech	04/27/2017 920	MB
NA	pCl/L			Ga-Tech	04/27/2017 920	MB
	ND NA ND	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L 1 NA pCi/L ND pCi/L	ND pCi/L 1 SM 7500 Ra-B NA pCi/L SM 7500 Ra-B ND pCi/L 2 Ga-Tech	ND pCi/L 1 SM 7500 Ra-B 04/26/2017 1534 NA pCi/L SM 7500 Ra-B 04/26/2017 1534 ND pCi/L 2 Ga-Tech 04/27/2017 920

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1704106-005 ClientSample ID: S10R-A11965

COC:

WEB 31-0135

Date Reported 5/1/2017

Report ID

\$1704106001

WorkOrder:

\$1704106

CollectionDate: 4/3/2017 2:04:00 PM

DateReceived: 4/7/2017 11:53:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
Radium 228	ND	pCi/L		2	Ga-Tech	04/27/2017 1224	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/27/2017 1224	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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1673 Terra Avenue, Sherldan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1704106-006 ClientSample ID: \$13-A11966

COC:

WEB 31-0135

Date Reported

5/1/2017

Report ID

S1704106001

WorkOrder:

S1704106

CollectionDate: 4/3/2017 12:34:00 PM

DateReceived:

4/7/2017 11:53:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCl/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
Radium 228	2,1	pCi/L		2	Ga-Tech	04/27/2017 1527	MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	04/27/2017 1527	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

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1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1704106-007 ClientSample ID: S14R-A11967

COC:

WEB 31-0135

Date Reported 5/1/2017

Report ID

S1704106001

WorkOrder:

\$1704106

CollectionDate: 4/3/2017 1:18:00 PM

DateReceived: 4/7/2017 11:53:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	04/26/2017 1534	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/26/2017 1534	MB
Radium 228	ND	pCi/L		2	Ga-Tech	04/27/2017 1832	MB
Padium 228 Precision (+)	NΑ	pGi/L			Ga-Tech	04/27/2017 1832	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

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

Reviewed by: Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 5/1/2017

Work Order:

S1704106

Report ID: S1704106001

Project:

Ottertail Power Hoot Lake

Radium 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L		
MB-430 (04/26/17 11:52)	RunNo: 145297	PrepDate: 04/17/17 14:00	BatchID 13102	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Total Radium 228	ND	1		
Radium 228 by Ga/Tech	Sample Type LCS	Units: pCi/L		
LCS-430 (04/26/17 14:57)	RunNo: 145297	PrepDate: 04/17/17 14:00	BatchID 13102	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Total Radium 228	39	1 40.1	98.1 65.9 - 132	
Radium 228 by Ga/Tech	Sample Type LCSD	Units: pCi/L		
LCSD-430 (04/26/17 18:01)	RunNo: 145297	PrepDate: 04/17/17 14:00	BatchID 13102	
Analyte	Result	RL Conc %RPD	%REC % RPD Limits	Qual
Total Radium 228	41	1 39 3.17	101 20	
Radium 228 by Ga/Tech	Sample Type MS	Units: pCi/L		
S1704140-003AMS (04/28/17 15:59)	RunNo: 145297	PrepDate: 04/17/17 14:00	BatchID 13102	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Total Radium 228	25	1 40.1 ND	62.8 50 - 139	
Radium 228 by Ga/Tech	Sample Type MSD	Units: pCi/L		
S1704140-003AMSD (04/28/17 19:04)	RunNo: 145297	PrepDate: 04/17/17 14:00	BatchID 13102	
Analyte	Result	RL Conc %RPD	%REC % RPD Limits	Qual
Total Radium 228	35	1 25 31.3	86.1 20	R
Radium 226 in Water -	Sample Type MBLK	Units: pCi/L		
MB-1741 (04/26/17 11:06)	RunNo: 145249	PrepDate: 04/19/17 0:00	BatchID 13099	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Radium 226	ND	0.2		
Radium 226 in Water -	Sample Type LCS	Units: pCi/L		
LCS-1741 (04/26/17 11:06)	RunNo: 145249	PrepDate: 04/19/17 0:00	BatchID 13099	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Radium 226	6.1	0.2 5.89	104 67.1 - 122	
Radium 226 in Water -	Sample Type MS	Units: pCi/L		
MS-1741 (04/26/17 11:06)	RunNo: 145249	PrepDate: 04/19/17 0:00	BatchID 13099	
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits	Qual
Radium 226	5.9	0.2 5.89 ND	101 65 - 131	
Radium 226 in Water -	Sample Type MSD	Units: pCi/L		
MSD-1741 (04/26/17 11:06)	RunNo: 145249	PrepDate: 04/19/17 0:00	BatchID 13099	
Analyte	Result	RL Conc %RPD	%REC % RPD Limits	Qual
Radium 226	6.4	0.2 ND	109 20	

Qualifiers:

- Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

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

Project Name: Otter Tail Power Co. Hoot Lake Plant					Project Type: Hoot Lake Plant						Name of Samplers: Jeth Hoffman								
Report To: Attn: Address: Phone:	Paul Vuko P.O. Box 4	Power Company nich l96 lls, MN 56038-04		Carbon Attn: Address			Quote Number: Work Order Number: Lab Numbers:						2 01	o1¥					
		Sample Inforn	nation					-	-	_		Bott	He 1	Type	_	-			Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	Voc Set	1000 none	1000 HAIO.	500 HNOS	1	1	1	1		500 NaOH H2SO4	Other: 150 Ho.	Other 150 2	
11961	S2A		S Apr 17	عاافال	GW			1	2	7	n			43		40			see attachment
1962	S3AR			1200	GW			1	2	1	n								
1963	S51			1720	GW			1	2	1	n				\neg				
1964	S52			1802				1	2	1	_				1				
965	S10R			1404	GW		11	1	2	1	n	1			1	+	-		
19/6/6	S13			1234	GW		++	1	2	1					-	-	-	-	
67	S14R		1		GW			1	2	U	n				1				
omments:	CCR wells Work Orde				6	-50	NH 61	10 3	3 1	รับ	l With	h +	he.	Re	3. 8	Am.	pl/,	ng	
mples R	elinguished	By: G	JI NU	د	13		Sam	ple	s R	ece	iver	l Rv	1	7	X	910	di)
te: mples Re	거 Apr elinquished		Time: 13	S Lóg in C	Temp:	/,2 77/ Other:	Date			1p				Tim	e:	13.		-	Temp: /. 2C
mples Re	elinquished	By:					Sam	ple	s R	ece	iveo	Bv						_	
te:			Time:		Temp:		Date	_				. <u>.</u> .	_	Time	a.		-		Temp:
liver		Samplers	Other:				Seal		ımb	er(s) - 1	f Us	ed		-				i only.
inspu		Ambient	Ice		Other:	- 60.	Seal	s In	tac	12			Yes		1	No			

HLP "H" Monitoring Parameters (ccR)

CCR - Appendix III Detection Monitoring

Field Parameters

pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron Calcium

Chloride

Fluoride

рΗ

Sulfate

Dissolved Solids, Total

HLP "I" Monitoring Parameters CCR

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228

sampling Information

Sample Event Key #

.andfill Name: Otter Tail Power Co / Hoot Lake Plant "Spring"

acility ID:

SW-211

Casing

Diameter Analytical

Veil Number	Unique Number	TOC Elev.	(in.)	Analytical Parameters	Pump Type	Dedicated?	Purge Rate	Well Depth
/-1		1282.03	4	List B	Submersible	N/A	0.25	115.00
1-3		1275.83	4	List B	Submersible	N/A	0.25	110.00
}-1		1273.50	2	List C	Bladder	No	0.25	74.00
3-2A		1273.78	2"	List C	Bladder	No	0.25	79.63
3-3		1276.67	2	List B	Bladder	N/A	0.25	22.67
)-3A-R	TO SECURE	1271,56	2	List C	Grundfos	No	0.25	78,42
5-4		1277.92	2	List B	Bladder	N/A	0.25	40.72
3-5		1295.34	2	List C	Bladder	No	0.25	95.57
3-6	N. W. S. S. S.	1263.63	2	List C	Grundfos	No	0.25	58.90
3-10R	WEELEN.	可以以外或 能	2	List C	Grundfos	No	0.25	81.00
3-11 ·		1279.08	2	List C	Grundfos	No	0.25	75.97
3-13	學學學的	1296.42	2	List C	Grundfos	No	0.25	90.19
5-14R			2	List C	Grundfos	No	N/A	87.00
351			2	List C	Bladder	Yes	0.25	55.60
352			2	List C	Bladder	Yes	0.25	88.30
eachate		N/A	N/A	List A	Pump	No	unknown	N/A
eachate LDS	· 大学的基础	N/A	N/A	List A	Pump	No	unknown	N/A
SW-1 Upstream		N/A	·N/A	List D	Grab	N/A	N/A	N/A
W-2 Downstream	m	1200.67	N/A	List D	Grab	N/A	N/A	N/A
3-2014				List C	Grundfos		0.25	114.00
)ur : 2e 1	NA	NA	N/A	List B	NA	NA	NA	NA
quipinent Blank	NA	NA	N/A	List B	NA	NA	NA	NA
						(20.0		

Equipment Blank and Duplicate sample from List B Wells

.ist A=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O.

Lab:Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate, Ammonia,
Nitrate + Nitrite Nitrogen, Total Phosphorous, Potassium, Aluminum, Arsenic, Barium, Beryllium,
B, Cd, Ca, Total Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Mercury, Molybdenum,
Mn, Ni, Se, Silver, Strontium, Sodium, Thallium, Tin, Vanadium, Zinc, Fluoride, Antimony
CBOD, TKN

.ist B=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation

Lab:Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate, Ammonia,

Nitrate + Nitrite Nitrogen, Total Phosphorous, Dissolved: Aluminum, Arsenic, Barium, Potassium

Beryllium, B, Cd, Ca, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Mercury, Molybdenum,

Mn, Ni, Se, Silver, Strontium, Sodium, Thallium, Tin, Vanadium, Zinc, Antimony

Note: Parameters only needed if they are detected in the Leachate. Be, Co, Ag, Sn

Sample Event Key #

_andfill Name: Facility ID: Otter Tail Power Co.
Hoot Lake Plant "Spring"

12.1

ist

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation

Lab:Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate, Ammonia,

Nitrate + Nitrite Nitrogen, Dissolved: K, Al, As, B, Cd, Ca, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Na,

Chromium

.ist D=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation

Lab: Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate, Ammonia,

Nitrate + Nitrite Nitrogen, K, Al, As, B, Cd, Ca, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Na,

Total Chromium

_ist E=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation Lab: Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate,

Dissolved: As, B, Se,

_ist F=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation Lab: Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate,

Disovled: As, B, Se, Mo

_ist G=

Field: Appearance, pH, Specific Conductance, Temp, Turb., D.O., Static water Elevation Lab: Appearance, pH, Specific Conductance, Alkalinity, Chloride, TDS, TSS, Sulfate,

Dissolved: As, B, Se, Ni

_is:

Field: pH

Lab:pH, Chloride, TDS, Sulfate,

B, Calcium, Fluoride

_ist |=

Total Fluoride, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium

Cobalt Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Radium 226 and 228 combined

3ottle List A= 500 ne

500 none, 1000 None, 500 HNO3, 500 H2SO4

3ottle List B=

1000 None, 500 HNO3 filtered, 500 H2SO4 500 HNO3 filtered, 500 H2SO4 500 HNO3 filtered, 500 H2SO4

3ottle List C=

1000 None, 500 HNO3, 500 H2SO4

3ottle List D=
3ottle List E=

1000 None, 500 HNO3 filtered

3ottle List F=

1000 None, 500 HNO3 filtered

3ottle List G=

1000 None, 500 HNO3 filtered

3ottle List H,I

1000 None, 500 HNO3, 2-1000 HNO3,

Stabilization Parameters: Temperature 0.5, Specific Conductivity 5%, Turbidity, pH 0.1 Filters .45 micon

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

			Site:			wer Co./Ho	
Sampling Personnel:			Facility ID:	SW-	211		
Ben wolf	_		Date: 3	April 17			
			Unique Sta	ition ID:			
			Sample ID:	S-2/	\		
Well Condition			Protective	Danta Co)	Na	
Well Locked? (eg No Well Labeled? (es No			State ID Ta			No No	
Casing Straight? (es) No	_		Grout Seal)	No	
Repairs Necessary:							
Well Information							
Well Depth: 79. 61	Well Casin	g Elevation:		1273.77	6		
Constructed Depth: 79.63			Static Water	er Elevation:	119	7.27	
Casing Diameter: 2"			Previous S	tatic: 1/97	13	Parringson	, en-e-
Water Level Before Purge: 76	,5/		Water Leve	el After Sample):		
-			Measurement Method: Elec. WJ Steel Ta				
Well Volume: • 5 /	Galloris	_	Measurent	ent Methou.	LICO		
Sampling Information				ent wethou.			
Sampling Information	59	Wind:	NE OYZ	Sky:	Fai		
Sampling Information		Wind:			Fa		
Sampling Information Weather Conditions: Temp:	59)	NE ØYZ	Sky: Grab Other	Fa		
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos	59 Nadder SS)	NE WYZ Whale	Sky: Grab Other	Fa	gpm	
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No.	59 Nadder SS)	WE ØYZ Whale Pumping R	Sky: Grab Other ate:	Fa.	gpm aı	m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes	59 Aladder SSA)	WE OY > Whale Pumping R Time Pump	Sky: Grab Other late:	Fa	gpm aı	m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry?	59 Aladder SSA	Disp. Bailer	WE OY > Whale Pumping R Time Pump	Sky: Grab Other Late: Description: Sky: Control Description: Sky:	Fa.	gpm aı	m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General:	59 Madder SSA	Disp. Bailer Color: 1/	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other Late: Description: Sky: Control Description: Sky:	Fa. 5	gpm ai ai Odor: /	m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grandfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Time pH Specific Cond.	Jadder SS/V	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other Late: 26 Began: 16 Impling: 16 It 62, 0	Fa.	gpm ai ai Odor: /	m / g m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grandfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: 3 pH Specific Cond. 1610 6.81 889	Jadder SST	Color: 1/1	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other Late: 26 Began: 16 Impling: 16 It 62, 0 See: Nove Gallons Removed 75	Fa. 5	gpm ai ai Odor: /	m / g m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grandfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: 3 pH Specific Cond. 1610 6.81 889	Jadder SST	Color: 1/1 D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other Late: 26 Began: 16 Impling: 16 It 62, 0 See: Nove Gallons Removed 75	Fa. 507	gpm ai ai Odor: /	m / g m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Time pH Specific Cond. 1610 6.81 889 1613 6.79 887	Jadder SS/V	Color: 1/2 D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other late: 24 Began: 16 In 62, 6 Se: None Gallons Removed 75	Fa. 507	gpm ai ai Odor: /	m / g m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grandfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: 3 pH Specific Cond. 1610 6.81 889	59 Nadder SS/V) ID:	Color: 1/2 D. O. mg/L 4,89 4,51	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU G.G 5./	Sky: Grab Other Late: 26 Began: 16 Impling: 16 It 62, 0 See: Nove Gallons Removed 75	Fa, 550 7 16 1 2 3 3	gpm ai ai Odor: /	m / g m / g
Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Time pH Specific Cond. 1610 6.81 889 1613 6.79 887	59 Nadder SS/V) ID:	Color: 1/2 D. O. mg/L 4,89 4,51	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU G.G 5./	Sky: Grab Other late: 24 Began: 16 In 62, 6 Se: None Gallons Removed 75	Fa, 550	gpm ai ai Odor: /	m / g m / g

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

New Ulm, MN 56073

Groundwater Assessment						
Sampling Personnel:			Facility ID:	SW-	-211	
Jose Hollman	_		Date:	3 Apr	17	
			Unique Sta	tion ID:	7467	(
			Sample ID:	S-3/	A-R	
Well Condition						
Well Locked? Yes No	_		Protective			No
Well Labeled? YES No	_		State ID Ta	g? Yes		No
Casing Straight? Yes No	-		Grout Seal	Intact? Yes		(No)
Repairs Necessary:						
Well Information						
Well Depth: 78,90			Well Casing	g Elevation:		1271.562
Constructed Depth: 78.42	_		Static Water	er Elevation:		1203,68
Casing Diameter: 2"			Previous S	tatic:		1203.96
Water Level Before Purge: 17	88,		Water Leve	el After Sample	e: (17.97
		Measurement Method: Elec. WLI Steel Ta				
Well Volume: 1,7ス Sampling Information	Gallons		Measureme	ent Method:	Elec	; WLI Steel T
Well Volume: 1,7ス) *	Wind: № Disp. Bailer	Measureme - 5 Whale	Sky:	Sy	nny
Well Volume: 1,7ス Sampling Information Weather Conditions: Temp: 52) *		-5	Sky: Grab Other	Sy:	
Well Volume: フィフス Sampling Information Weather Conditions: Temp: 5 Sampling Method: Grundfos) *		- S Whale	Sky: Grab Other ate: 0, 2	Sy:	nay
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No) *		Whale Pumping R	Sky: Grab Other ate: 0, 2	Տ	nn y gpm
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry?) *		Whale Pumping R Time Pump	Sky: Grab Other ate: 0 2 Began: \(\) mpling: \(\)	S4 5 145	gpm am) p
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry?	Bladder SS/		Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0 2 Began: \(\) mpling: \(\)	S4 5 145 206	gpm am) p
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General:	Bladder SS/	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0, 2 Began: \ mpling: \(\frac{1}{2} \)	S4 5 145 206	gpm (am) p (agh / p Odor: 1/0/N
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No	Bladder SS/	Disp. Bailer Color: No.	Whale Pumping R Time Pump Time of Sal Sample EH	Sky: Grab Other ate: 0.2 Began: \ mpling: \(\frac{\partial}{2}\) : 78. \(\frac{\partial}{2}\)	Sy 5 145 20le	gpm (am) p (agh / p Odor: 1/0/N
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: C	ID:	Color: No.	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0.2 Began: \ mpling: \(\frac{\partial}{2} \) Se: \(\sqrt{\partial} \) Gallons	Sy S Dolo	gpm (air) p (air) / p Odor: 1/0/1
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: C Time pH Specific Cond.	ID: Temp	Color: Aroa	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Sky: Grab Other ate: 0.2 Began: Model of the second of the secon	S4 30 le	gpm (air) p (air) / p Odor: 1/0/1
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: C Time pH Specific Cond. 1153 L. 9 944 1159 L. 90 947	ID: Temp oc 9.04	Color: No.	Whale Pumping R Time Pump Time of Sar Sample EH Phase Turbidity NTU 9.9	Sky: Grab Other ate: 0.2 Began: \ mpling: \(\frac{1}{2} \) Gallons Removed 1,75 3,50	\$400 SEC #	gpm (air) p (air) / p Odor: 1/0/1
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: C Time pH Specific Cond.	ID: Temp	Color: Aroa	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Sky: Grab Other ate: 0.2 Began: Model of the second of the secon	Sec # 1 2 3	gpm (air) p (air) / p Odor: 1/0/1
Well Volume: 7,72 Sampling Information Weather Conditions: Temp: 5; Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: C Time pH Specific Cond. 1153 L. 9 944 1159 L. 90 947	ID: Temp oc 9.04	Color: No.	Whale Pumping R Time Pump Time of Sar Sample EH Phase Turbidity NTU 9.9	Sky: Grab Other ate: 0.2 Began: \ mpling: \(\frac{1}{2} \) Gallons Removed 1,75 3,50	\$400 SEC #	gpm (air) p (air) / p Odor: 1/0/1

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

Groundwater Assessm	ent		Site:	Otte	rtail Pow	ver Co./H	loot Lake
Sampling Personnel:			Facility ID:	SW-	-211		
Ben wolf				April 17			
			Unique Stat	tion ID: 8148	830		
			Sample ID:	S-51			
Well Condition)					B	
Well Locked? (es)	No		Protective P	400	,	(No)	
Well Labeled? Casing Straight? Ves	No No		State ID Tag Grout Seal			No	
	NO		Grout Sear	Intact? (4s	/	No	
Repairs Necessary: Well Information							
Well Depth: 55.4	øŎ		Well Casing	Elevation:		1286.9	
Constructed Depth: 55.60)		Static Water	r Elevation:	1-36	94	
Casing Diameter: 2"			Previous Sta		7,17		
Water Level Before Purge:	49.96		Water Level	l After Sample	5 5 C	0.02	
-4	Water Level After Sample: 50.02 Measurement Method: Elec. WLI Steel Ta				Steel Ta		
Well Volume: • 92	Gallons	_	Measurente	nt ivietnoa:	CIEC.	7.	
1.12	Galloris	-	Measureme	ent ivietnoa:	LIEC.	7	
Well Volume: • ¶2 Sampling Information Weather Conditions: Temp	ra	Wind: (V)	E B/8	Sky:	+		
Sampling Information	o: 59	Wind: (V)			Facin		
Sampling Information Weather Conditions: Temp	o: 59 fos Bladder SS/T		E @ 8	Sky:	Facin		
Sampling Information Weather Conditions: Temp Sampling Method: Grundt	o: 59 fos Bladder SS/T		Whale	Sky: Grab Other ate: , 25	Facin		
Sampling Information Weather Conditions: Temp Sampling Method: Grund Dedicated Equipment: Ves Well Purged Dry? Yes	o: 59 fos Bladder SS/T		Whale Pumping Ra	Sky: Grab Other ate: , 2-5 Began: 17	Feel r		am /(pi
Sampling Information Weather Conditions: Temp Sampling Method: Grundt Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry?	o: 59 fos Bladder SS/T No		Whale Pumping Ra Time Pump Time of San	Sky: Grab Other ate: 25 Began: 17 npling: 17	Facilities:		am /(pi
Sampling Information Weather Conditions: Temp Sampling Method: Grundt Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry?	o: 59 fos Bladder SS/T No No No D: ~		Whale Pumping Ra Time Pump Time of San Sample EH:	Sky: Grab Other ate: , 2-5 Began: 17 npling: 17	Fair : :00	gpm	am / pr am / sf
Sampling Information Weather Conditions: Temp Sampling Method: Grundt Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene	fos Bladder SS/T No No No ID: Tral: Clear	Disp. Bailer	Whale Pumping Ra Time Pump Time of San Sample EH:	Sky: Grab Other ate: , 2-5 Began: 17 npling: 17	Fair : :00	gpm	am /(pr
Sampling Information Weather Conditions: Temp Sampling Method: Grundi Dedicated Equipment: Yes Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time pH Speci	fos Bladder SS/T No No No ID: Teral: Clear ific Temp oc	Disp. Bailer Color: MC	Whale Pumping Ra Time Pump Time of San Sample EH:	Sky: Grab Other. ate: , 2-5 Began: 17 npling: 17 -67.9 e: 1107	Fair 200	gpm	am / pi am / si
Sampling Information Weather Conditions: Temp Sampling Method: Grundt Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time PH Speci	no Bladder SS/T No No No ID: Tral: Clear	Disp. Bailer Color: MC	Whale Pumping Ra Time Pump Time of San Sample EH: Phase	Sky: Grab Other. ate: , 25 Began: 17 npling: 17	Fair (00)	gpm Odor:	am / pi am / si
Sampling Information Weather Conditions: Temp Sampling Method: Grundt Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time PH Speci	no Bladder SS/T No No No ID: Temp oc D2 9-00	Color: A/C	Whale Pumping Ra Time Pump Time of San Sample EH: Phase Turbidity NTU	Sky: Grab Other. ate: , 25 Began: 17 npling: 17	F=0) (gpm Odor:	am / pi am / si
Sampling Information Weather Conditions: Temporary Sampling Method: Grundi Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time pH Speci Cond 1708 6.91 73	o: 59 fos Bladder SS/T No (No) ID: ific Temp oc 02 9.00 03 8.63	Color: A/C D. O. mg/L 2.20	Whale Pumping Ra Time Pump Time of San Sample EH: Phase Turbidity NTU 65.3	Sky: Grab Other. ate: , 25 Began: 17 npling: 17 -67.9 e: 1000	Fee) 7	gpm Odor:	am / pi am / si None
Sampling Information Weather Conditions: Temporary Sampling Method: Grundi Dedicated Equipment: Ves Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time pH Speci Cond 1708 6.91 73 1712 6.80 76	ific Temp °C 92 9.63	Disp. Bailer Color: MC D. O. mg/L 2.20 1.10 .78	Whale Pumping Ra Time Pump Time of San Sample EH: Phase Turbidity NTU	Sky: Grab Other ate: , 25 Began: 17 npling: 17 -67.9 e: 1/07 Gallons Removed 1 2	Fee) 7 : : :: :::::::::::::::::::::::::::::	gpm Odor:	am / pi am / si
Sampling Information Weather Conditions: Temporary Sampling Method: Grunds Dedicated Equipment: Wes Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time pH Speci Cond 1708 6.91 73 1712 6.80 75 1716 6.80 75	ific Temp °C 9.00 73 8.63 73 8.50 75 8.45	Disp. Bailer Color: MC D. O. mg/L 2.20 1.10 .78 .69	Whale Pumping Ra Time Pump Time of San Sample EH: Phase Turbidity NTU 65.3 46.1	Sky: Grab Other ate: , 25 Began: 17 npling: 17 -67.9 e: 1/07 Gallons Removed 1 2 3	SEQ # 1 2 3 4	gpm Odor:	am / pi am / si
Sampling Information Weather Conditions: Temporary Sampling Method: Grunds Dedicated Equipment: Wes Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: Gene Time pH Speci Cond 1708 6.91 73 1712 6.80 75 1716 6.80 75	ific Temp °C 9.00 73 8.63 73 8.50 75 8.45	Disp. Bailer Color: MC D. O. mg/L 2.20 1.10 .78 .69 .67	Whale Pumping Ra Time Pump Time of San Sample EH: Phase Phase Turbidity NTU 65.3 46.1 23.6 12.0	Sky: Grab Other ate: , 25 Began: 17 npling: 17 -67.9 e: 1/07 Gallons Removed 1 2	F=0) 7 :: COO 2-0 SEQ # 1 2 3	gpm Odor:	am / pr am / sf www.

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

	ssment			Site:	Otte	rtail Pov	ver Co./Hoot Lake
Sampling Personnel:		_		Facility ID:	SW-	211	
Ben	WOI	F		Date: 3	April.	17	
				Unique Sta	ation ID: 822	155	
				Sample ID	: S-52		
Well Condition							
Well Locked?	Yes No	_		Protective			No
Well Labeled?	No No	_		State ID Ta		_	No
	(es/No	_		Grout Seal	Intact? (Yes		No
Repairs Necessary: Well Information							
	38.30			Well Casin	g Elevation:		1286.62
	88.30				er Elevation:	1216	. 75
	2"	_		Previous S		16.C	
Water Level Before Purge	e: 70.	37			el After Sample		2.40
	.92	Gallons		-	ent Method:	Elec.	1
Sampling Information							
		57	Wind: N	IE QK	Sky:	Fou	'n
Weather Conditions:		57 Bladder SS/T	Wind: N	PEQIC Whale	Sky:		'n
Weather Conditions: Sampling Method:	Temp:				Grab Other	5	gpm
Weather Conditions: Sampling Method: Dedicated Equipment:	Temp:			Whale	Grab Other ate: 2 8	726	
Weather Conditions: Sampling Method: Dedicated Equipment:	Temp: Grundfos Ves No			Whale Pumping R	Grab Other ate: 2 8	726	gpm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry?	Temp: Grundfos Ves No			Whale Pumping R Time Pump	Grab Other ate: 2 8	5	gpm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample?	Temp: Grundfos Ves No Yes No	Bladder SS/T	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: 2 6 Began: 17 mpling: 18 1: - 122. G	726	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Gundfos Yes No Yes No General:	ID:	Disp. Bailer Color: Me	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: 26 Began: 17 mpling: 18 I: -122. G	5 726 702 Sed	gpm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Grundfos Yes Yes Yes General:	ID: ~	Disp. Bailer Color: Me	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other late: 2 & Began: 1 & Began: 1 & Gallons	5 726 02 Sed	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time PH	Temp: Grundfos Yes No Yes No General: Specific Cond.	ID: Temp	Color: MG	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Grab Other ate: 2 6 Began: 1 8 mpling: 1 8 i: -122.6 se: Liry 1 + Gallons Removed	502 Sed	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time 17 38 6-97	Temp: Grundfos Yes Yes General: Specific Cond. 733	ID: Temp	Color: Me	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU Q, Q	Grab Other ate: 2 6 Began: 1 7 Impling: 1 8 I: - 1 22 G Se: Lingth + Gallons Removed	5 726 02 Sed	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time 17 38 (9 97) 17 50 (9.03)	Temp: Grundfos Yes No Yes No General: Specific Cond. 733 732	ID: ~ Clear Temp °C V,49 8.46	Color: MG	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU Q, Q 3, 2	Grab Other Late: 2 6 Began: 1 7 Impling: 18 I: -122. G Se: Lary 11 Gallons Removed 3	502 Sed	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time 17 38 6-97	Temp: Grundfos Yes Yes General: Specific Cond. 733	ID: Temp	Color: Me	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU Q, Q	Grab Other ate: 2 6 Began: 1 7 Impling: 1 8 I: - 1 22 G Se: Lingth + Gallons Removed	Sed, #	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time 17 38 (9 97 17 50 (9.93)	Temp: Grundfos Yes No Yes No General: Specific Cond. 733 732	ID: ~ Clear Temp °C V,49 8.46	Disp. Bailer Color: Me D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU Q, Q 3, 2	Grab Other Late: 2 6 Began: 1 7 Impling: 18 I: -122. G Se: Lary 11 Gallons Removed 3	Sed. SEQ. #	gpm am / pm am / pm
Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time 17 38 (9 97) 17 50 (9.03)	Temp: Grundfos Yes No Yes No General: Specific Cond. 733 732	ID: ~ Clear Temp °C V,49 8.46	Disp. Bailer Color: Me D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH Turbidity NTU Q, Q 3, 2	Grab Other Late: 2 6 Began: 1 7 Impling: 18 I: -122. G Se: Lary 11 Gallons Removed 3	Sed, SEQ, 1 2 3	gpm am / pm am / pm

Comments:

L, UL

Exceptions to Protocol:

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

		Site:	Otte	rtall Fo	wer Co./	I IOOL La	
Sampling Personnel:			Facility ID:	SW	-211		
Test Hold	ran		Date:	3 Apr 17			
			Unique Sta	1 1	0 CE 3	41	
			Sample ID			1	
Well Condition				4			
Well Locked? Yes No Well Labeled? Yes No	-		Protective State ID To)	No	_
Casing Straight?	_		Grout Sea			No No	-
Repairs Necessary:							
Well Information							
Well Depth: 80.62	Well Casin	g Elevation:	- 1	281,	17		
Constructed Depth:						209,4	15
Casing Diameter: 2"	_		Previous S	tatic:	-		
Water Level Before Purge: 72	102		Water Level After Sample: 79.03 Measurement Method: Elec. WLI) Steel				
Well Volume:	Gallons						
Sampling Information							
Weather Conditions: Temp: SL		Wind: 🙏	1-5			Londy	
Weather Conditions: Temp: 51 Sampling Method: Grundfos	j 0 Eladder SS/		Whale	Grab Other		/	
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: Yes No			Whale Pumping R	Grab Other		gpm	/
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: Ves No Well Purged Dry? Yes No			Whale Pumping R Time Pump	Grab Other late: ,35 Began: \3	3.34	/	
Weather Conditions: Temp: \$1 Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry?	eladder SSA		Whale Pumping R Time Pump	Grab Other late: , 3.5 Began: 13	3134	/	
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No	eladder S\$/) Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other late: ,25 Began: 13 mpling: 14	3134	gpm	am K
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: (es) No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No	eladder S\$/		Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other late: , 3.5 Began: 13	3134	gpm	am K
Weather Conditions: Temp: \$\frac{1}{2}\$ Sampling Method: Grundfos Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: \$\frac{1}{2}\$ \$\hat{\text{Specific}}\$	ID:	Color: No A	Whale Pumping R Time Pump Time of Sa Sample EH Pha	Grab Other late: ,25 Began: 10 mpling: 14 i: -80 se: NO LE Gallons	9 SEQ	gpm Odor:	am K
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cond.	ID:	Color: No A	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other late: , 25 Began: , 5 mpling: 15 it: -80 se: No Le Gallons Removed	9	gpm Odor:	am K
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: (es) No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cond. Cond. Cond. Cond.	ID: Temp OC 9,14	Color: No A D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH Pha	Grab Other late: ,25 Began: ,3 mpling: 4 i: -80 se: No Le Gallons Removed	9 SEQ	gpm Odor:	am K
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cond.	ID: Temp oc 9,14	Color: No A D. O. mg/L 8,06 4,24	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other late: ,25 Began: 13 mpling: 14 se: No ve Gallons Removed 1,5	3134 9 9	gpm Odor:	am K
Weather Conditions: Temp: \$1, Sampling Method: Grundfos Dedicated Equipment: (es) No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cond. Cond. Cond. Cond.	ID: Temp OC 9,14	Color: No A D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other late: ,25 Began: ,3 mpling: 4 i: -80 se: No Le Gallons Removed	5:34 04 9	gpm Odor:	am K
Weather Conditions: Temp: \$2 Sampling Method: Grundfos Dedicated Equipment: (es) No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes (No) Sample Appearance: General: Cond. Specific Cond. Syo Cond. Specific Syo Specific Specific Specific Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Syo Sy	ID: Temp oc 9,14	Color: No A D. O. mg/L 8,06 4,24	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other late: ,25 Began: 13 mpling: 14 se: No ve Gallons Removed 1,5	SEQ # 1	gpm Odor:	am K
Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: CI Time pH Specific Cond. 1346 6,89 961 1346 1346 6,89 901	ID: Temp oc 9,14 9,08	D. O. mg/L 4.24 4.96	Whale Pumping R Time Pump Time of Sa Sample EH Phai	Grab Other late: ,25 Began: 13 mpling: 14 se: No ve Gallons Removed 1,5 3,0 4,5	SEQ # 1 2	gpm Odor:	am Ki

Exceptions to Protocol:

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

	Groundwater Assessment					ver Co./Hoot Lake	
ampling Personnel:				SW	-211		
2 Hollman	2		Date: 3	Apr 17			
	_		Unique Sta	ation ID:			
	27		Sample ID	: S-13	3		
12.30							
(Yes) No				363.7		No	
	_			M.		No	
epairs Necessary:				Intact? (Yes		No	
G4 77							
Well Depth: 90.2.7				g Elevation:		1296.423	
90.19	_		Static Water	er Elevation:		12/0/75	
2"	_		Previous S	tatic:		1211,61	
rge: 85,	رحا		Water Leve	el After Sample	e:	85.74	
0.75	Gallons		Measurement Method: Elec. WLI Steel 1				
on							
Temp: 5	7	Wind: N	5	Sky:	Suni	14	
Grundfos	Bladder SS/T	Disp. Bailer	Whale			J	
Yes No		,	Pumping R	late: 0.2	5	gpm	
Yes (No)			Time Pump	Began: \	2125	am /pr	
-			Time of Sa			am (pr	
Yes (No)	ID:	-					
General: C	Kens	Color: NO				Odor: Now	
To:6-	Temp	-	· ·	D-11.	Toro	1	
						Comments:	
		The second				Confinents.	
	9.44			15		-	
1	1,75		0.0	The second secon	2		
864	9,42	2,29	0.0	2,25	3		
1		N.			4	1	
					-		
	Yes No Yes No Yes No Yes No Yes No Yes No Temp: 52 Grundfos Yes No Yes No Yes No General: C Specific Cond. 859	Yes No Yes No Yes No Yes No Yes No 90.7.7 90.19 2" rge: \$5.67 7.7 Gallons on Temp: 5.7 Grundfos Bladder SS/T Yes No Yes No Yes No ID: General: 1.6 Specific Temp Cond. Cond. 90.49 862 9.49 862 9.49	Yes No Yes No Yes No Yes No Yes No Yes No 90.7.7 90.19 2" rge: \$5.197 Orandfos Bladder SS/T Disp. Bailer Yes No Yes No Yes No Temp: 5.2 Yes No Temp D. O. General: (And Color: Mo Specific Temp Cond. 90.0 90.7.7 Specific Temp Cond. 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90	Unique State Sample ID Yes No ID: General: (Law Color: No Wall Phase Specific Temp Cond. Specific	Unique Station ID: Sample ID: S-1: Ves No Yes No Temp: 52 Grundfos Bladder SS/T Disp. Bailer Whale Grab Other Yes No Yes No Yes No Yes No ID: General: 1/4 A/C Specific Cond. Specific Cond. Specific Cond. Specific Cond. Sample ID: Sample ID: S-1: Well Casing Elevation: Yes Static Water Elevation: Water Level After Sample Measurement Method: Whale Grab Other Whale Grab Other Sampling: Time of Sampling: Sample EH: Time of Sampling: Sample EH: Time of Sampling: Sample EH: Time Of Sampling: Time Of	Unique Station ID: Sample ID: S-13 Protective Posts? Fest State ID Tag? Vest State ID Tag? Vest State ID Tag? Vest State ID Tag? Vest Static Water Elevation: 90.19 2" Previous Static: Water Level After Sample: Water Level Af	

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

New Ulm, MN 56073

	Site: Ottertail Power Co./Hoot Lake				
	Facility ID: SW-211				
	Date:	3 Apr 17			
	Unique Sta	tion ID:	80634		
	Sample ID:	S-14	IR		
				No	
		The state of the s		No	
	Grout Seal	Intact? Yes		No	
	Well Casin	g Elevation:	128	80,6	
	Static Water	er Elevation:	120	01.36	
	Previous S	tatic:	10-	٠	
	Water Leve	el After Sample	: 79	,25	
ns	Measureme	ent Method:	Elec.	WLI) Steel Tap	
Wind:	N-5	Sky:	Sunt	n	
SS/T) Disp. Bailer	Whale	Grab Other		/	
	Pumping R	ate: 195	-	gpm	
	Time Pump	Began: 12	54	am Fpm	
	Time of Sa	mpling: [3	(3)	am (pm	

Onlaw				Odor & A a	
GOIOT: AZZ	The Phas	Se: Amart		CHAIL SECTION	
Color: NO	Phas	se: None		Oddi. Supran	
D. O.	Turbidity	Gallons	SEQ	1	
D. O. mg/L	Turbidity NTU	7	SEQ #	Comments:	
D. O. mg/L	Turbidity	Gallons Removed		1	
D. O. mg/L	Turbidity NTU	Gallons Removed	#	1	
D. O. mg/L 7 1.01	Turbidity NTU 9,0 5,2	Gallons Removed	1 2	1	
D.O. mg/L 7 1.01 6 0.71	Turbidity NTU 9,0 5,2 3,8	Gallons Removed	# 1 2 3	1	
D. O. mg/L 7 1.01	Turbidity NTU 9,0 5,2	Gallons Removed	# 1 2 3 4	Odor: Supplies	
D.O. mg/L 7 1.01 6 0.71 1 0.41 2 0.29	Turbidity NTU 9,0 5,2 3,8	Gallons Removed 1.5 3.0 4.5 4.5	# 1 2 3		
		Facility ID: Date: Unique Sta Sample ID: Protective I State ID Ta Grout Seal Well Casing Static Wate Previous Static Water Leve Measureme Wind: N Solution Measureme Time Pump Time of Sat	Facility ID: SW-Date: 3 Apr 17 Unique Station ID: Sample ID: S-14 Protective Posts? Yes State ID Tag? Yes Grout Seal Intact? Yes Well Casing Elevation: Static Water Elevation: Previous Static: Water Level After Sample Measurement Method: Wind: N - 5 Sky: SS/T Disp. Bailer Whale Grab Other Pumping Rate: Pumping Rate: Time Pump Began: 12 Time of Sampling: 13	Facility ID: SW-211 Date: 3 Apr 17 Unique Station ID: 80634 Sample ID: S-14R Protective Posts? Yes State ID Tag? Yes Grout Seal Intact? Yes Well Casing Elevation: 126 Static Water Elevation: 126 Previous Static: Water Level After Sample: 79 Measurement Method: Elec. Wind: N-5 Sky: Sunt SS/T Disp. Bailer Whale Grab Other: Pumping Rate: 25 Time Pump Began: 12:54 Time of Sampling: 13:64	

Exceptions to Protocol:



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



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FINAL REPORT COMPLETION DATE: 23 Jun 17 08

Date Reported: 20 Jun 2017

Work Order #: 31-0189 Account #: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

Field Service Manager/Date Reviewed

Chemistry Lab Manager/Date Reviewed

With the wormson

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S2A

Report Date: 20 Jun 2017 Lab Number: 17-A18609 Work Order #: 31-0189

Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 3 May 2017 12:26 Sampled By: MVTL FIELD PERSONNEL Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.0C

	As Received Result		Method RL	Method Reference		e alyze	Analyst		
MS Water Digestions					5	Мау	17		JMS
Water Digestions					5	May	17		JMS
Radium 226	SEE ATTAC	HED			20	Jun	17	7:18	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20	Jun	17	7:19	ABL
pH, Field	6.81	units	1.00	I-1586-85	3	May	17	12:26	BMW
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	4	May	17	15:30	DK
Sulfate	140 @	mq/L	5.0	ASTM D516-07	11	May	17	8:01	KCJ
Chloride	< 3	mq/L	3	SM 4500 C1 E	5	May	17	11:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18	May	17	14:34	RMB
Solids, Total Dissolved	626	mg/L	10	SM 2540 C-97	5	May	17	13:54	RC
Calcium	135.0	mg/L	0.500	SW6010C	9	May	17	10:11	RC
Odroram	See Narra					12,50			
Lithium	0.032	mq/L	0.005	SW6010C	9	May	17	10:11	RC
Barium	0.041	mg/L	0.005	SW6010C	9	May	17	10:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9	May	17	10:11	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9	May	17	10:11	RC
Boron	0.177	mg/L	0.100	SW6010C				10:11	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9	May	17	19:04	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	9	May	17	19:04	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	17	May	17	12:06	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A				19:04	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	9	May	17	19:04	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A				12:06	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A	17	May	17	12:06	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	17	May	17	12:06	RMV
THELLIAM	@See Narr								
Fluoride	0.250	mg/L	0.020	EPA 300.0	5	May	17	10:06	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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:

0 = Due to sample matrix
1 = Due to sample quantity
1 = Due to sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Report Date: 20 Jun 2017 Lab Number: 17-A18610 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:56
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.0C

	As Receive Result	ed	Method RL	Method Reference	Date Analyze	1	Analyst
MS Water Digestions					5 May	17	JMS
Water Digestions					5 May	17	JMS
Radium 226	SEE ATTAC	HED			20 Jun	7:19	ABL
Radium 228	SEE ATTACI			EPA M9320	20 Jun		ABL
pH, Field	6.85	units	1.00	I-1586-85	3 May	17 11:56	BMW
pH PIEIG	* 7.2	units	1.0	SM 4500 H+ B-2000	4 May	17 15:30	DK
Sulfate	120 @	mg/L	5.0	ASTM D516-07	11 May		KCJ
Chloride	12.4	mg/L	3.0	SM 4500 Cl E	5 May	17 11:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May	17 14:34	RMB
Solids, Total Dissolved	552	mg/L	10	SM 2540 C-97	5 May	17 13:54	RC
Calcium	114.0	mg/L	0.500	SW6010C	9 May	17 10:11	RC
Carcrum	See Narra		77777	(212222)			
Lithium	0.022	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Barium	0.041	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May	17 10:11	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C		17 10:11	RC
Boron	0.196	mg/L	0.100	SW6010C	9 May	17 10:11	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A		17 19:04	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	17 May	17 12:06	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 May	17 19:04	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	17 May	17 12:06	RMV
	< 5 @^	ug/L	0.5	SW6020A	17 May	17 12:06	RMV
Selenium	< 0.5	ug/L	0.1	SW6020A	17 May	17 12:06	RMV
Thallium	@See Narr		*.*	AUGRETIA			
Fluoride	0.200	mg/L	0.020	EPA 300.0	5 May	17 10:06	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 20 Jun 2017 Lab Number: 17-A18611 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:47
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyz	ed	Analyst
MS Water Digestions					5 May	17	JMS
Water Digestions					5 May	17	JMS
Radium 226	SEE ATTAC	HED			20 Jun	17 7:19	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun	17 7:19	ABL
pH, Field	6.96	units	1.00	I-1586-85	3 May	17 11:47	JLH
pH, FIELG	* 7.1	units	1.0	SM 4500 H+ B-2000	4 May	17 15:30	DK
Sulfate	61.4 @	mg/L	5.0	ASTM D516-07	11 May	17 8:01	KCJ
Chloride	16.5	mg/L	3.0	SM 4500 C1 E	5 May	17 11:53	AKF
	< 0.005	ug/L	0.005	EPA 245.7		17 14:34	RMB
Mercury Solids, Total Dissolved	466	mg/L	10	SM 2540 C-97		17 13:54	RC
Calcium	114.0	mg/L	0.500	SW6010C	9 May	17 10:11	RC
Calcium	See Narra			75			
Lithium	0.023	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Barium	0.065	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May	17 10:11	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C		17 10:11	RC
Boron	< 0.1	mg/L	0.1	SW6010C		17 10:11	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A		17 19:04	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	17 May	17 12:06	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A		17 19:04	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A		17 12:06	RMV
Molybdendm Selenium	< 5 0 ^	ug/L	0.5	SW6020A		17 12:06	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A		17 12:06	RMV
TRAILLIAM	@See Narr		710	730777	1		
Fluoride	0.260	mg/L	0.020	EPA 300.0	5 May	17 10:06	RC
WALLES AND STORY OF THE PARTY O							

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-52

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Report Date: 20 Jun 2017 Lab Number: 17-A18612 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 12:34
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.00

	As Receiv Result	ed	Method RL	Method Reference	Date Analyz	ed	Analyst
MS Water Digestions					5 May	17	JMS
Water Digestions					5 May		JMS
Radium 226	SEE ATTAC	HED			20 Jun	17 7:19	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun	17 7:20	ABL
* IT 1 * 1 IT	6.97	units	1.00	I-1586-85	3 May	17 12:34	JLH
pH, Field	* 7.1	units	1.0	SM 4500 H+ B-2000		17 15:30	DK
pH Culture	59.3 @	mg/L	5.0	ASTM D516-07	11 May		KCJ
Sulfate Chloride	15.3	mg/L	3.0	SM 4500 C1 E	5 May	17 11:53	AKF
	< 0.005	ug/L	0.005	EPA 245.7	18 May	17 14:34	RMB
Mercury	463	mg/L	10	SM 2540 C-97	5 May	17 13:54	RC
Solids, Total Dissolved	108.0	mg/L	0.500	SW6010C		17 10:11	RC
Calcium	See Narra		0,000	5,100,100			
	0.021	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Lithium	0.112	mg/L	0.005	SW6010C		17 10:11	RC
Barium	< 0.01	mg/L	0.01	SW6010C	9 May	17 10:11	RC
Chromium	< 0.01 ^	mg/L	0.005	SW6010C		17 10:11	RC
Cobalt	< 0.1	mg/L	0.1	SW6010C	9 May	17 10:11	RC
Boron			0.5	SW6020A		17 19:04	RMV
Antimony	< 2.5 @	ug/L	0.50	SW6020A	9 May	17 19:04	RMV
Arsenic	2.67 @	ug/L	0.05	SW6020A		17 12:06	RMV
Beryllium	< 0.25 @	ug/L	0.1	SW6020A		17 19:04	RMV
Cadmium	< 0.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Lead	< 2.5 @	ug/L		SW6020A	17 May	17 12:06	RMV
Molybdenum	2.55 @	ug/L	0.50	SW6020A	17 May	17 12:06	RMV
Selenium	< 5 @^	ug/L	0.5	VEG 1 A THE SAME		17 12:06	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	I/ May	1, 12,00	IMIA
	@See Narr		0.000	DD2 300 0	E Mari	17 10:06	RC
Fluoride	0.210	mg/L	0.020	EPA 300.0	5 May	1, 10.00	ING.

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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:

| E Due to sample matrix | | Due to concentration of other analytes |
| Due to sample quantity | | Due to internal standard response |
| CERTIFICATION: MN LAB | 027-015-125 | WI LAB | 999447680 | ND MICRO | 1013-M | ND WW/DW | R-040



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 20 Jun 2017 Lab Number: 17-A18613 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:12
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyze	d	Analyst
MS Water Digestions					5 May		JMS
Water Digestions					5 May		JMS
Radium 226	SEE ATTAC	HED			20 Jun		ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun		ABL
pH, Field	6.87	units	1.00	I-1586-85	3 May	17 11:12	JLH
pH PH	* 7.1	units	1.0	SM 4500 H+ B-2000	4 May	17 15:30	DK
Sulfate	98.7 @	mg/L	5.0	ASTM D516-07	11 May	17 8:01	KCJ
Chloride	11.6	mg/L	3.0	SM 4500 CL E	5 May	17 11:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May	17 14:34	RMB
Solids, Total Dissolved	517	mg/L	10	SM 2540 C-97	5 May	17 13:54	RC
Calcium	125.0	mg/L	0.500	SW6010C	9 May	17 10:11	RC
Calcium	See Narra		2.5.2.2	Color of order	200		
Lithium	0.022	mg/L	0.005	SW6010C	9 May	17 10:11	RC
	0.133	mg/L	0.005	SW6010C	9 May	17 10:11	RC
Barium Chromium	< 0.01	mg/L	0.01	SW6010C	9 May	17 10:11	RC
Cobalt	0.011 ^	mg/L	0.005	SW6010C	9 May	17 10:11	RC
지 하면 지만 T	< 0.1	mg/L	0.1	SW6010C	9 May	17 10:11	RC
Boron	< 2.5 @	ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Antimony	25.0 @	ug/L	0.50	SW6020A	9 May	17 19:04	RMV
Arsenic	< 0.25 @	ug/L	0.05	SW6020A	17 May	17 12:06	RMV
Beryllium	< 0.5 @	ug/L	0.1	SW6020A	9 May	17 19:04	RMV
Cadmium		ug/L	0.5	SW6020A	9 May	17 19:04	RMV
Lead	< 2.5 @		0.50	SW6020A	17 May	17 12:06	RMV
Molybdenum	2.73 @	ug/L	0.5	SW6020A	17 May	17 12:06	RMV
Selenium	< 5 0^	ug/L	0.1	SW6020A	17 May	17 12:06	RMV
Thallium	< 0.5	ug/L	0.1	SWOOZON	I. nay		
Carlos Ca	@See Narr		0.020	EPA 300.0	5 May	17 10:06	RC
Fluoride	0.200	mg/L	0.020	ELA DOD TO	~ ()	2 A 22 1 2 2	40.2

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-13

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Report Date: 20 Jun 2017 Lab Number: 17-A18614 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:19
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45
PO #: 48679

20 11. 100/2

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analy	zed		Analyst
MS Water Digestions		_			5 Ma	17		JMS
Water Digestions					5 Ma	17		JMS
Radium 226	SEE ATTAC	HED			20 Ju		7:21	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Ju	1 17	7:21	ABL
pH, Field	6.38	units	1.00	I-1586-85	3 Ma	1 17 1	1:19	BMW
	* 7.1	units	1.0	SM 4500 H+ B-2000		17 1		DK
pH Sulfate	81.7 0	mg/L	5.0	ASTM D516-07	11 Ma		8:01	KCJ
Chloride	7.6	mg/L	3.0	SM 4500 C1 E		17 1	1:53	AKF
	< 0.005	ug/L	0.005	EPA 245.7		17 1		RMB
Mercury	494	mg/L	10	SM 2540 C-97		1 17 1		RC
Solids, Total Dissolved	112.0	mg/L	0.500	SW6010C		17 1		RC
Calcium	See Narra		0.300	Direction	1.000			
4 7 4 6 7 mm	0.024	mg/L	0.005	SW6010C	9 Ma	17 1	0:11	RC
Lithium	0.060	mg/L	0.005	SW6010C	9 Ma	17 1	0:11	RC
Barium	< 0.01	mg/L	0.01	SW6010C	9 Ma	17 1	0:11	RC
Chromium	0.010 ^	mg/L	0.005	SW6010C		17 1		RC
Cobalt	< 0.1	mg/L	0.1	SW6010C		17 1		RC
Boron	< 2.5 @	ug/L	0.5	SW6020A		17 1		RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A		17 1		RMV
Arsenic	< 0.25 @		0.05	SW6020A	17 Ma	17 1	2:06	RMV
Beryllium		ug/L	0.1	SW6020A		17 1		RMV
Cadmium	< 0.5 @	ug/L	0.5	SW6020A		17 1		RMV
Lead	< 2.5 @	ug/L		SW6020A		17 1		RMV
Molybdenum	< 2.5 0	ug/L	0.5	SW6020A SW6020A		17 1		RMV
Selenium	< 5 @^	ug/L	0.5			17 1		RMV
Thallium	< 0.5	ug/L	0.1	SW6020A	I' Ma	X TX T	2.00	Later V
	@See Narr	The second second second	0.000	EB3 300 0	E Ma	17 1	0.06	RC
Fluoride	0.250	mg/L	0.020	EPA 300.0	o Ma	ATIT	.0.00	110

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Page: 8 of 9

Report Date: 20 Jun 2017 Lab Number: 17-A18615 Work Order #: 31-0189 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 13:01
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 16:45

PO #: 48679

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analy	zed		Analyst
MS Water Digestions					5 Ma	y 17		JMS
Water Digestions					5 Ma			JMS
Radium 226	SEE ATTAC	HED				n 17		ABL
Radium 228	SEE ATTAC			EPA M9320	20 Ju	n 17	7:21	ABL
pH, Field	7.00	units	1.00	I-1586-85	3 Ma	y 17	13:01	BMW
pH pH	* 7.2	units	1.0	SM 4500 H+ B-2000			15:30	DK
Sulfate	105 @	mg/L	5.0	ASTM D516-07		y 17		KCJ
Chloride	5.5	mg/L	3.0	SM 4500 C1 E			11:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7			14:34	RMB
Solids, Total Dissolved	568	mg/L	10	SM 2540 C-97			13:54	RC
Calcium	129.0	mg/L	0.500	SW6010C			10:11	RC
Calcium	See Narra		2,444			100		
Lithium	0.028	mg/L	0.005	SW6010C	9 Ma	v 17	10:11	RC
Barium	0.072	mg/L	0.005	SW6010C			10:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C			10:11	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C			10:11	RC
Boron	< 0.1	mg/L	0.1	SW6010C			10:11	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9 Ma	v 17	19:04	RMV
Arsenic	2.88 @	ug/L	0.50	SW6020A	9 Ma	y 17	19:04	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	17 Ma	v 17	12:06	RMV
Cadmium	< 0.5 0	ug/L	0.1	SW6020A			19:04	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A			19:04	RMV
Molybdenum	< 2.5 0	ug/L	0.5	SW6020A	17 Ma	v 17	12:06	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A			12:06	RMV
Thallium	< 0.5	ug/L	0.1	SW6020A			12:06	RMV
IHALLIUM	@See Narr		~	37135777				
Fluoride	0.220	mg/L	0.020	EPA 300.0	5 Ma	y 17	10:06	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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Date Reported: 20 Jun 2017

Work Order #: 201731-0189 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES:
The relative percent difference between the matix spike and matrix spike duplicate for Thallium was above the acceptance range for samples 17-A18609 through 17-A18615. The laboratory control spike, matrix spike, and matrix spike duplicate recoveries were all acceptable. Data that was below the reporting limit was reported.

Due to the concentration of calcium in the spiked sample, calcium failed to recover in the matrix spike for samples 17-A18609 through 17-A18615. Data was reported based on acceptable laboratory control spike recovery and relative percent difference between the matrix spike and matrix spike duplicate.

No other problems were encountered during these analyses.



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 6/19/2017

CLIENT: Project:

MVTL Inc

Ottertail Power Hoot Lake

Lab Order:

S1705189

CASE NARRATIVE

Report ID: S1705189001

Samples A18609 S2A, A18610 S3AR, A18611 S51, A18612 S52, A18613 S10R, A18614 S13, and A18615 S14R were received on May 9, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID: ClientSample ID: A18609 S2A

S1705189-001

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705189001

WorkOrder:

S1705189

CollectionDate: 5/3/2017 12:26:00 PM 5/9/2017 11:24:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/25/2017 1456	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/25/2017 1456	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/17/2017 650	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/17/2017 650	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1705189-002 ClientSample ID: A18610 S3AR

COC:

WEB

Report ID

Date Reported 6/19/2017

S1705189001

WorkOrder:

S1705189

CollectionDate: 5/3/2017 11:56:00 AM

DateReceived:

5/9/2017 11:24:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/25/2017 1456	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/25/2017 1456	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/17/2017 954	МВ
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/17/2017 954	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits J.

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName: Ottertail Power Hoot Lake

Lab ID: \$1705189-003 **ClientSample ID:** A18611 S51

COC: WEB

Date Reported 6/19/2017

Report ID \$1705189001

WorkOrder: S1705189

CollectionDate: 5/3/2017 11:47:00 AM **DateReceived:** 5/9/2017 11:24:00 AM

FieldSampler:

Matrix: Water

Comments

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga- T ech	06/17/2017 1257	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/17/2017 1257	MB

These results apply only to the samples tested.

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

M Value exceeds Monthly Ave or MCL or is less than LCL

O Outside the Range of Dilutions

X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName: Ottertail Power Hoot Lake

Lab ID: \$1705189-004 **ClientSample ID:** A18612 \$52

COC: WEB

 Date Reported
 6/19/2017

 Report ID
 \$1705189001

WorkOrder: S1705189

CollectionDate: 5/3/2017 12:34:00 PM **DateReceived:** 5/9/2017 11:24:00 AM

FieldSampler:

Matrix: Water

Comments

Comments							1
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/17/2017 1600	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/17/2017 1600	МВ

These results apply only to the samples tested.

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

M Value exceeds Monthly Ave or MCL or is less than LCL

O Outside the Range of Dilutions

X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName: Ottertail Power Hoot Lake

Lab ID: \$1705189-005 **ClientSample ID:** A18613 \$10R

COC: WEB

Date Reported 6/19/2017 **Report ID** S1705189001

WorkOrder: S1705189

CollectionDate: 5/3/2017 11:12:00 AM DateReceived: 5/9/2017 11:24:00 AM

FieldSampler:

Matrix: Water

Comments

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	2.2	pCi/L		2	Ga-Tech	06/17/2017 1903	MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	06/17/2017 1903	MB

These results apply only to the samples tested.

Qualifiers: B

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

M Value exceeds Monthly Ave or MCL or is less than LCL

O Outside the Range of Dilutions

X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1705189-006 ClientSample ID: A18614 S13

COC:

WEB

Date Reported 6/19/2017

Report ID

S1705189001

WorkOrder:

S1705189

CollectionDate: 5/3/2017 11:19:00 AM

5/9/2017 11:24:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Result Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	06/17/2017 2206	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/17/2017 2206	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1705189-007 ClientSample ID: A18615 S14R

COC:

WEB

Date Reported Report ID

6/19/2017 S1705189001

WorkOrder:

S1705189

CollectionDate: 5/3/2017 1:01:00 PM

DateReceived:

5/9/2017 11:24:00 AM

FieldSampler:

Matrix:

Water

Comments

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	Init
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/18/2017 109	MB
Radium 228 Precision (±)	NA	pCi/L			Ga- T ech	06/18/2017 109	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Ε Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Х Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 6/19/2017

Work Order: S

S1705189

Report ID: S1705189001

Project: Ottertail Power Hoot Lake

Radium 228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L			
MB-439 (06/16/17 21:41)	RunNo: 146951	Prep	Date: 05/2	2/17 13:02	Bato	:hID 13303	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1					
Radium 228 by Ga/Tech	Sample Type LCS		Units	: pCi/L			
LCS-439 (06/17/17 00:44)	RunNo: 146951	Prep	Date: 05/2	2/17 13:02	Bato	hID 13303	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	43	1	40.1		108	65.9 - 132	
Radium 228 by Ga/Tech	Sample Type LCSD		Units	: pCi/L			
LCSD-439 (06/17/17 03:47)	RunNo: 146951	Prep	Date: 05/2	2/17 13:02	Bato	hID 13303	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	46	1	43	6.54	115	20	
Radium 228 by Ga/Tech	Sample Type MS		Units	: pCi/L			
S1705188-004AMS (06/19/17 01:34)	RunNo: 146951	Prep	Date: 05/2	2/17 13:02	Bato	hID 13303	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	86	1	80.1	1	105	50 - 139	
Radium 228 by Ga/Tech	Sample Type MSD		Units	: pCi/L			
S1705188-004AMSD (06/19/17 04:37)	RunNo: 146951	Prep	Date: 05/2	2/17 13:02	Bato	hID 13303	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	73	1	86	15.7	89.7	20	

Qualifiers: B Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 6/19/2017

Work Order: S1705189

Report ID: S1705189001

Project: Ottertail Power Hoot Lake

Radium 226 in Water -	Sample Type MBLK	Units: pCi/L	
MB-1753 (05/26/17 06:46)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q	Qual
Radium 226	ND	0.2	
MB-1754 (05/30/17 09:52)	RunNo: 146341	PrepDate: 05/22/17 0:00 BatchID 13230	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q	Qual
Radium 226	ND	0.2	
Radium 226 in Water -	Sample Type LCS	Units: pCi/L	
LCS-1753 (05/25/17 11:37)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q	Qual
Radium 226	6.4	0.2 6.41 99.8 67.1 - 122	
LCS-1754 (05/30/17 09:52)	RunNo: 146341	PrepDate: 05/22/17 0:00 BatchID 13230	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q	Qual
Radium 226	5.8	0.2 6.41 90.6 67.1 - 122	
Radium 226 in Water -	Sample Type LCSD	Units: pCi/L	
LCSD-1753 (05/25/17 11:37)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	·	Qual
Radium 226	6.5	0.2 6.4 1.65 101 20	
LCSD-1754 (05/30/17 09:52)	RunNo: 146341	PrepDate: 05/22/17 0:00 BatchID 13230	
Analyte	Result		Qual
Radium 226	6.4	0.2 5.8 9.14 98.8 20	
Radium 226 in Water -	Sample Type MS Units: pCi/L		
S1705188-004AMS (05/25/17 11:37)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits C	Qual
Radium 226	12.5	0.2 12.8 0.4 93.8 65 - 131	
S1705188-007AMS (05/25/17 14:56)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits C	Qual
Radium 226	12.4	0.2 12.8 ND 97.0 65 - 131	
S1705189-003AMS (05/30/17 09:52)	RunNo: 146341	PrepDate: 05/22/17 0:00 BatchID 13230	
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits C	Qual
Radium 226	11	1 12.8 ND 83.2 65 - 131	
Radium 226 in Water -	Sample Type MSD	Units: pCi/L	
S1705188-004AMSD (05/25/17 14:56)	RunNo: 146130	PrepDate: 05/18/17 0:00 BatchID 13210	
Analyte	Result	•	Qual
Radium 226	13.1	0.2 12.5 5.21 99.0 20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 6/19/2017

Work Order:

S1705189

Report ID: S1705189001

Project:

Ottertail Power Hoot Lake

Radium	226 in	Water -	
--------	--------	---------	--

Sample Type MSD

Units: pCi/L

	S1705188-007AMSD (05/25/17 14:56)	RunNo: 146130	PrepD	Date: 05/18	/17 0:00	Batc	hID 13210		
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
•	Radium 226	12.8	0.2	12.4	3.13	100	20		

Qualifiers:

Analyte detected in the associated Method Blank В

G Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Not Detected at the Reporting Limit ND RPD outside accepted recovery limits

R Matrix Effect Х

Ε Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Outside the Range of Dilutions 0

Spike Recovery outside accepted recovery limits

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

MEMBER ACIL

Page: 1 of 1

Quality Control Report

MVTL

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	104	85-115	25.0	17A18619q	< 2.5	27.3	109	75-125	27.3	27.9	112	2.2	10	102	90-110	< 0.5
Arsenic ug/L	25.0	104	85-115	25.0	17A18619q	< 2.5	28.2	113	75-125	28.2	29.5	118	4.5	10	100	90-110	< 0.5
Barium mg/L	1.000	102	85-115	1.00	17A18619q	0.011	0.949	94	75-125	0.949	1.040	103	9.2	10	101	90-110	< 0.005
Beryllium ug/L	2.50	114	85-115	2.50	17A18619q	< 0.25	2.50	100	75-125	2.50	2.54	102	1.6	10	106	90-110	< 0.05
Boron mg/L	1.000	102	85-115	1.00	17A18619q	0.428	1.280	85	75-125	1.280	1.400	97	9.0	10	98	90-110	< 0.1
Cadmium ug/L	5.00	105	85-115	5.00	17A18619q	< 0.5	5.47	109	75-125	5.47	5.39	108	1.5	10	100	90-110	< 0.1
Calcium mg/L	50.00	104	85-115	50.0	17A18619q	316.0	329.0	26	75-125	329.0	360.0	88	9.0	10	107	90-110	< 0.5
Chloride mg/L	1.5		13	60.0	17-A18619	47.9	108	100	85-121	108	110	104	1.8	5	97	90-110	< 3
Chromium mg/L	1.000	104	85-115	1.00	17A18619q	< 0.01	0.894	89	75-125	0.894	0.977	98	8.9	10	103	90-110	< 0.01
Cobalt mg/L	1.000	105	85-115	1.00	17A18619q	0.009	0.864	86	75-125	0.864	0.945	94	9.0	10	104	90-110	< 0.005
Fluoride mg/L				0.20	a18619qc	0.540	0.720	90	75-125	0.720	0.720	90	0.0	10	101	90-110	< 0.02
Lead ug/L	25.0	101	85-115	25.0	17A18619q	< 2.5	24.9	100	75-125	24.9	27.0	108	8.1	10	100	90-110	< 0.5
Lithium mg/L	1.000	101		1.00	17-A18619	0.105	1.100	100		1.100	1.170	106	6.2		102		< 0.005
Mercury ug/L	100		1.	0.10	17-A18618	< 0.005	0.101	101	63-111	0.101	0.102	102	1.0	18	94	76-113	< 0.005
Molybdenum ug/L	25.0	102	85-115	25.0	17A18619q	4.12	30.1	104	75-125	30.1	30.7	106	2.0	10	102	90-110	< 0.5
pH units	911	W	l(#)				100		K T S-	7.0	7.0		0.0	2.5	101	90-110	2
Selenium ug/L	25.0	107	85-115	25.0	17A18619q	< 5	31.2	125	75-125	31.2	29.5	118	5.6	10	102	90-110	< 0.5
Solids, Total Dissolved mg/L	t		1	:		2		ļ.	i.	2160 1790	2260 1770	1	4.5 1.1	8	102	85-115	< 10
Sulfate mg/L	-	4.	10-1	500	17-A18609	140	651	102	74-128	651	674	107	3.5	5	101	80-120	< 5
Thallium ug/L	5.00	102	85-115	5.00	17A18619q	< 0.5	5.10	102	75-125	5.10	5.69	114	10.9	10	99	90-110	< 0.1

The calcium matrix spike recovery was outside the acceptance limits, see narrative. The thallium duplicate RPD was outside the acceptance limits, see narrative.

Approved by:

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

New Ulm, MN 56003 Fax: 507 359 2890

1147

1301

1234 GW

1112 GW

GW

GW

GW

Field Service Chain of Custody Record

This is an exact copy of the original document

By As Date 3 May 17

Pages 1-11

Project N		Otter Tail Po	lant	Projec	t Type:	Hoot Lake	Plant			Nai	me c	f Sa	mpl	ers:	F	Re	7	Wolf		
Report To Attn: Address: Phone:	Paul Vuk P.O. Box	il Power Company conich c 496 falls, MN 56038-04		Carbon Attn: Addres	Copy:					Wo	rk O	lumb rder nber	Nun	nber:	31		-5	E HORE	Yan	
-		Sample Inform	nation					_		-	B	ottle	Tv	no	_	=	-		Analysis	
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	VOC Set	1000 1000 T	1000 HNO3	500 HIVO3		No3	/>	/	500 No.	1	Other 150	Analysis Required	Allalysis	/
A18609	S2A		3 May 17	-	GW			1	2	1	n							see attach	ment	
10	S3AR			1156	GW			1	2	1	n	217								- 11

2 1 n

2 1 n

1 2

1 2

1 n

n

n

1 2

Comments: CCR wells
Work Order #2

S51

S52

S10R

S13

S14R

Delivery:	Samplers Ambient	Other:	Other:	Seal Number(s) - If Seals Intact?		Temp.
		Time:	Temp:	Date:	Time:	Temp:
Samples Relinqu Date:	isned By:			Samples Received	By:	
		Fridge Log	in Cart Other:	/*		
Samples Relingu	ished into:	Tine: 1645	Temp: 1.0 TM 615	Date: 3 May 17	Time: 1649	5 Temp: 1.00
Date: 3 say	ished By: Doy (NOD		Samples Received	By: U Juder	

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

рΗ

Sulfate

Dissolved Solids, Total

1-LiteR

HLP "I" Monitoring Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 - Z - 1000 HN03

Joshwo 3

Alice Lieder

From:

Tim Portner

Sent:

Thursday, May 04, 2017 2:11 PM

To:

Alice Lieder

Subject:

Big Stone

CCR - Appendix III Detection Monitoring

Field Parameters

pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

рΗ

Sulfate

Dissolved Solids, Total

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228

Groundwater Assessment	Site: Otter Tail Power Co./ Hoot Lake
Sampling Personnel:	Facility ID: SW-211
Bes Worf	Date: 3 May 17
	Unique Station ID:
	Sample ID: S-2A
Well Condition	
Well Locked? Yes (No)	Protective Posts? Yes No
Well Labeled? No	State ID Tag? Yes (lo
Casing Straight? (es) No	Grout Seal Intact? (ves) No
Repairs Necessary: Cap closs not fit o	ver dedicated pump
Well Information Well Depth: 79.61	Mull Octor Floority
	Well Casing Elevation: 1273.776
Constructed Depth: 79.63	Static Water Elevation: 119160
Casing Diameter: 2"	Previous Static: 1197-27
Water Level Before Purge: 7612	Water Level After Sample: ห็ปอน คนาค
Well Volume: 57 Gallons	Measurement Method: Riec. Wh Steel Tape
Sampling Information	0.0
Weather Conditions: Temp: Wind: W	IEX Sky: Party doudy
Sampling Method: Grundfos Bladder SS/T Disp. Bailer	Whale Grab Other:
Dedicated Equipment: Yes No	Pumping Rate: ,之5 gpm
Well Purged Dry? Yes No	Time Pump Began: 1217 am / pm
Time Purged Dry?	Time of Sampling: 1226 am / 6m
Duplicate Sample? Yes No ID:	Sample EH: 6 8
Sample Appearance: General: Clear Color: N	UTC Phase: NOTO Odor: NOTO
3 Specific Temp D. O.	Turbidity Gallons SEQ
Time pH Cond. oC mg/L	NTU Removed # Comments:
1220 (0.99 1014 9.07 1.70	0.2 ,75 1
1223 6.89 1018 8.93 1.55	0.0 1.50 2
11226 681 1019 895 141	
1226 6.81 1019 8.95 1.41	0.0 2.25 3
1226 6.81 1019 8.95 1.91	0.0 2.25 3
	0.0 2.25 3
	0.0 2.25 3

Groundwater Assessment	Site	e:	Otter Tail F	Power Co.	/ Hoot Lake		
Sampling Personnel:	Fac	cility ID:	SW-211				
Ben WOIF	<u>Da</u>	ite: 3 May	17				
	<u>Uni</u>	ique Station ID:	674671				
	Sai	ımple ID:	S-3A-R				
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Sta	otective Posts? ate ID Tag? out Seal Intact?	(es) (es) Yes	No No (No	-		
Well Information							
Well Depth: 78.40	We	ell Casing Elevati	,	1271.	562		
Constructed Depth: 78.42	Sta	atic Water Elevati	on: 120	<u>73. Ko</u>			
Casing Diameter: 2"	Pre	evious Static: 📝	2036g				
Water Level Before Purge: 67-80 Water Level After Sample: 68-00							
Well Volume: 1.73 Gallons	<u>Me</u>	easurement Metho	od: Ele	c. WLI)	Steel Tape		
Sampling Information	; ()	1		Ça.			
Weather Conditions: Temp: 57	Wind: L&L	/	Sky:	ce.r			
	Time. P C -						
Sampling Method: Grundfos (ladder SS/	Disp. Bailer Wha		Other:				
Sampling Method: Grundfos Hadder SS/ Dedicated Equipment: Yes No	Disp. Bailer Wha	ımping Rate:	Other:	gpm			
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No	Disp. Bailer What Pul	ımping Rate: ne Pump Began:	Other: , 25 1135		â€0/ pm		
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry?	Disp. Bailer Wha	imping Rate: ne Pump Began: ne of Sampling:	Other: , 25 1/35 1/56		ஹ்/ pm (்ன்) pm		
Sampling Method: Grundfos Radder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID:	Disp. Bailer Wha Pul Tim Tim Saa	Imping Rate: The Pump Began: The of Sampling: The management in the properties of th	Other: , 25 1135 1156 7.8	gpm	am pm		
Sampling Method: Grundfos Radder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID:	Disp. Bailer Wha Pul Tim Tim Saa	imping Rate: ne Pump Began: ne of Sampling:	Other: , 25 1135 1156 7.8	gpm			
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Car	Disp. Bailer What Pull Time Sal Color: \(\sqrt{\sq}}}}}}}}} \sqrt{\sq}}}}}}}}}} \sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}}} \sqit{\sqrt{\sqrt{\sq}\sq}}\sqrt{\sq}\sign}\sq\sint{\sint{\sint{\sint{\sint{\si	mping Rate: me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarity rbidity Gallon	Other: , 25 1135 1156 7.8 4+ Sed.	gpm Odor:	am) pm Sulfural		
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Car	Disp. Bailer What Pull Tim Sal Color: \(\sqrt{V} \omega \cap \cap \) D. O. Tur mg/L NT	me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon	Other: , 25 1135 1156 7.8 4+ Sed. s SE ved #	gpm Odor:	am pm		
Sampling Method: Dedicated Equipment: Wes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Temp Cond. Time 7 PH Cond. 7 7 7 7 7 7 7 7 7 7 7 7 7	Disp. Bailer What Pull Time Sal Color: \(\sqrt{\sq}}}}}}}}} \sqrt{\sq}}}}}}}}} \sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}} \sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}} \sqrt{\sqrt{\sqrt{\sq}}}}}}} \endotk\signt{\sqrt{\sq}}}}}}} \sqintitex{\sqrt	me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon TU Remo	Other: , 25 , 135 , 156 , 7.8 , 4 + Sed. ss SE , yed #	gpm Odor:	am) pm Sulfural		
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cear Time 7 pH Specific Temp Cond. Temp Cond. 7.04 927 9.05 1142 7.04 927 9.05	Disp. Bailer What Pull Tim Sal Color: No O-	mping Rate: me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon TU Remove 7.4 1.7	Other: , 25 1135 1156 7.8 4+ Sed. s SE ved # 5 1	gpm Odor:	am) pm Sulfural		
Sampling Method: Dedicated Equipment: Wes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Temp Cond. Time 7 PH Cond. 7 7 7 7 7 7 7 7 7 7 7 7 7	Disp. Bailer What Pull Tim Sal Color: \(\sqrt{V} \sqrt{\sqrt{V}} \sqrt{	mping Rate: me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon TU Remove 7.4 1.7	other: , 25 1135 1156 7.8 4+ Sed. s SE ved # 5 1 5 2 25 3	gpm Odor:	am) pm Sulfural		
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cear Time 7 pH Specific Temp Cond. Temp Cond. 7.04 927 9.05 1142 7.04 927 9.05	Disp. Bailer What Pull Tim Sal Color: No O-	mping Rate: me Pump Began: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon TU Remove 7.4 1.7	Other: , 25 1135 1156 7.8 4 + Sed. 5 1 5 2 25 3 4	gpm Odor:	am) pm Sulfural		
Sampling Method: Grundfos Madder SS/ Dedicated Equipment: Yes No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Car Time 7 pH Specific Cond. Temp Cond. 727 9.05 1142 7.04 927 9.05 1156 6.85 935 9.03	Disp. Bailer What Pull Tim Sal Color: No O-	me Pump Began: me of Sampling: me of Sampling: mple EH: ~70 Phase: Ligarbidity Gallon TU Remoi	other: , 25 1135 1156 7.8 4+ Sed. s SE ved # 5 1 5 2 25 3	gpm Odor:	am) pm Sulfuru		

Comments:

Groundwater Assessment	Site:	Otter Tail Pov	wer Co./ Hoot Lake		
Sampling Personnel:	Facility ID:	SW-211			
I ff Hoteman	Date: 3	MAYIT			
	Unique Station	on ID: 814830			
	Sample ID:	S-51			
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Protective Po State ID Tag Grout Seal In	? (Yes _o	No No No		
Well Information					
Well Depth: 55.60	Well Casing		1286.9		
Constructed Depth:	Static Water	Elevation:	:236,89		
Casing Diameter: 2"	Previous State				
Water Level Before Purge: 50,01	Water Level	After Sample:	<u>50.06</u>		
Well Volume: Gallons	<u>Measuremen</u>	Measurement Method: Elec. WLI Steel Tape			
Sampling Information	1				
Weather Conditions: Temp: 58 th	<u> Wind: いら 10</u>	Sky: Sนก	ny		
Sampling Method: Grundfos Bladder S	Disp. Bailer Whale	Grab Other:			
Dedicated Equipment: Yes No	Pumping Rat		gpm		
Well Purged Dry? Yes No	Time Pump E		(am y pm		
Time Purged Dry?	Time of Sam		am ∤ pm		
Duplicate Sample? Yes No ID:	Sample EH:	- 167.5			
Sample Appearance: General! Cloudy	Color: NOge Phase	NOVE	Odor: NOAR		
지 Specific Temp Time pH Cond. ^O C	D. O. Turbidity mg/L NTU	Gallons SEQ Removed #	Comments:		
436 6.95 824 9.03	1,93 223.0	1,0 1			
1135 697 836 885	1,06 88.7	2.0 2			
1139 696 842 8.73	0.77 36.6	3.0 3			
1143 4.94 843 8.6	0.62 22,2	4.0 4			
1147 6,96 843 8.7	0.63 14.4	5,D 5			
Stabilized? Yes (No)		50			

Comments:

Groundwater Assessment		Site:	Otter	Tall Pov	ver Co./ Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	11	
Jeff Hollman	Date: 3	MAL 17			
		Unique Stati		315	5
		Sample ID:	S-52		·
Well Condition					
Well Locked? (Yes) No		Protective P			No
Well Labeled? Yes No Casing Straight? Yes No		State ID Tag Grout Seal I		······	No
Casing Straight? Yes No Repairs Necessary:		Glout Seal II	illact! Tes/		NO
Well Information					
Well Depth: 88.30		Well Casing	Elevation:		1286.62
Constructed Depth:		Static Water		١	216-1
Casing Diameter: 2"		Previous Sta	atic:	*	
Water Level Before Purge: 70,5		Water Level	After Sample:	-	70,51
Well Volume: 2,90 Gallons		Measureme	nt Method:	Elec.	WL) Steel Tape
Sampling Information					
Weather Conditions: Temp: \mathcal{S}	Wind: い	s 10	Sky:	Sy	nny
Sampling Method: Grundfos Bladder S	्रीम Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: Yes No		Pumping Ra	te: 0,2		gpm
Well Purged Dry? Yes No		Time Pump		<u> 58</u>	(am)/ pm
Time Purged Dry?		Time of Sampling: 12 34 am (pm)			
Duplicate Sample? Yes No ID:	<u> </u>	Sample EH:	- 197	7	
Sample Appearance: General: 🗘 ¿ ୠ જ	Color: NO	ທະ Phase	e: Nove		Odor: Sulfure
\2 Specific Temp	D. O.	Turbidity	Gallons	SEQ	<u> </u>
Time pH Cond. ^O C	mg/L	NTU	Removed	#	Comments:
1210 494 829 8,63	0.48	0,0	3	1	
1223 697 829 8.56		6.0	6	2	
1234 6.97 828 8.64		0,0	9	3	
	,		•	4	
				5	
Stabilized Yes No	Amount Ws	ater Removed:	9,0	10	Gallons
Comments	Amount Wa	ALCI INGINOVEU.	1,0		CaliOTIS

Exceptions to Protocol:

- Not in notes program

Groundwater Assessment		Site:	Otter	Tail Po	wer Co./ Hoot Lake
Sampling Personnel:	Facility ID:	SW-2	211		
I Hothenay		Date:	& MAn 1	- <u>y</u>	
		Unique Stati	on ID: 8063	41	
		Sample ID:	S-10I	₹	
Well Condition				····	
Well Locked? Yes No		Protective P			No
Well Labeled? Yes No Casing Straight? Yes No		State ID Tag			No
Repairs Necessary:		Grout Seal I	ntact? (Yès)	····	No
Well Information					
Well Depth: 含のよう		Well Casing	Elevation:		1281.47
Constructed Depth:		Static Water	Elevation:	\	209.45
Casing Diameter: 2"		Previous Sta	atic:	ر ا	209,45
Water Level Before Purge: 72,02		Water Level	After Sample		2.02
Well Volume: \\O Gallons		Measuremen	nt Method:	€lec.	WLI Steel Tape
Sampling Information					
Weather Conditions: Temp: 5 ₹	Wind: い	<u>s 10</u>	Sky:	Syn	nλ
Sampling Method: Grundfos Sladder SS/T	🖔 Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: Ves No		Pumping Ra	te: η, 'λ ^L	<u></u>	gpm
Well Purged Dry? Yes (No)		Time Pump Began: (0:54 am) pm			
Time Purged Dry?		Time of Sampling: \(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\			(am) pm
Duplicate Sample? Yes No ID:		Sample EH:	-24,4		
Sample Appearance: General: Cleas	Color: NO	Phase	E MOVE		Odor: NONE
∠ Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. ^O C	mg/L	NTU	Removed	#	Comments:
11:00 6.79 893 9.35	0.78	10.1	1,5	1	
11:06 6.84 895 9.31	0.66	7.5	3,D	2	
11:12 6.87 896 9.31	0,56	4,0	4.5	3	
				4	1
				5	
Stabilized? Yes No	Amount Wa	ter Removed:	4.5	5	Gallons

Groundwater Assessment	Site:	Otter Tail Power Co./ Hoot Lake
Sampling Personnel:	Facility ID:	SW-211
Ben wolf	Date: 3 M	ay 17
	Unique Station	n ID:
	Sample ID:	S-13
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Protective Pos State ID Tag? Grout Seal Inta	Ves No
Well Information		
Well Depth: 90. ス7	Well Casing E	4
Constructed Depth: 90.19	Static Water E	llevation: 기가6·8그
Casing Diameter: 2"	Previous Station	o: 1210.75
Water Level Before Purge: \$5 60	Water Level A	fter Sample: 86-21
Well Volume: , 76 Gai	ns Measurement	Method: Ælec. WLI Steel Tape
Sampling Information	. 0	150
Weather Conditions: Temp: 5 /	Wind: LLU	sky: Four
Sampling Method: Grundfos Blad	r SS/ Disp. Bailer Whale G	Grab Other:
7()	/	
Dedicated Equipment: (es No	Pumping Rate	
Dedicated Equipment: (ves) No Well Purged Dry? Yes No	Time Pump Be	egan: 10
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry?	Time Pump Be Time of Sampl	egan: 103 em/pm ling: 119 am pm
Dedicated Equipment: (es No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID:	Time Pump Be Time of Sampl Sample EH:	egan: 103 (m) pm ling: 119 (am) pm -61.8
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry?	Time Pump Be Time of Sampl Sample EH:	egan: 103 (m) pm ling: 119 (am) pm -61.8
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Cle	Time Pump Be Time of Sample Sample EH: Color: A/On Phase:	egan: 103 am) pm ling: 119 am) pm -(01.8 A/C) Odor: Sculfurous Gallons SEQ
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Ce Time PH Specific Ter Cond. OC	Time Pump Be Time of Sample Sample EH: Color: A/On Phase: D. O. Turbidity mg/L NTU F	egan: 103 am/1 pm ling: 119 am/2 pm -(01.8 NO) Odor: Sulfwow
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Ce Time pH Specific Cond. Wes No ID: Sample Appearance: General: Ce Time pH Specific Cond. Ves No ID: Sample Appearance: General: Ce Ves No ID: Sample Appearance: Gener	Time Pump Be Time of Sample Sample EH: Color: Area Phase: D. O. Turbidity MTU F O 2.24 5.0	egan: 0 am pm ling: 1 9 am pm -(01.8 Odor: Sulfucius Gallons SEQ Comments: 1 1
Dedicated Equipment: (es) No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Cle Time PH Cond. Ter Cond. PH	Time Pump Be Time of Sample Sample EH: Color: Area Phase: D. O. Turbidity MTU F O 2.24 5.0 Color: Area Phase: Turbidity NTU F O 2.24 5.0	egan: 0 am pm ling: 1 9 am pm -(01.8 Odor: Sulfucius Gallons SEQ Comments: 1 1
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Ce Time pH Specific Cond. Wes No ID: Sample Appearance: General: Ce Time pH Specific Cond. Ves No ID: Sample Appearance: General: Ce Ves No ID: Sample Appearance: Gener	Time Pump Be Time of Sample Sample EH: Color: Aon Phase: D. O. Turbidity MTU F O 2.24 5.0 Color: Aon Turbidity F O 2.24 5.0	egan: 103 am) pm ling: 119 am) pm -(01.8 A/C) Odor: Scul fuccing Gallons SEQ Comments: 1 1 2 2 3 3
Dedicated Equipment: Ves No Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cle Time PH Specific Ter Cond. Cond. NO7 (a.6,7 853 9 NO N	Time Pump Be Time of Sample Sample EH: Color: Area Phase: D. O. Turbidity MTU F O 2.24 5.0 Color: Area I Solution O 3.24 5.0 Color: Area I Solution O 3.25 5.0 Color: Area I Solution O 3.25 5.0 Color: Area I Solution O 3.25 5.0 Color: Area I Solution O 4.0 5.0 O 5.0 5.0 Color: Area I Solution O 5.0 5.0 Color: Area I Solution O 5.0 5.0 Color: Area I Solution O 6.0 5.0 O 7.0 5.0	egan: 103 am) pm ling: 119 am) pm -(018 NO) Odor: Sulfwows Gallons SEQ Removed # Comments: 1 1 2 2 3 3

Comments:

Groundwater Assessment	Site: Otter Tail Power Co./ Hoot Lake				
Sampling Personnel:	Facility ID: SW-211				
Ben Wolf	Date: 3 May				
	Unique Station ID:				
	Sample ID: S-14R				
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	Protective Posts? Yes No State ID Tag? Yes No Grout Seal Intact? Yes No				
Well Information	7 h				
Well Depth: 87.11	Well Casing Elevation:				
Constructed Depth:	Static Water Elevation:				
Casing Diameter: 2"	Previous Static:				
Water Level Before Purge: 79.09	Water Level After Sample:)9-09				
Well Volume: 1.31 Gallons	Measurement Method: Elec. WLh Steel Tape				
Sampling Information	100				
	W@8 sky: Partly doing				
Sampling Method: Grundfos Bledder SS/T Disp. Baile					
Dedicated Equipment: (es) No	Pumping Rate: , 2,5 gpm				
Well Purged Dry? Yes (No)	Time Pump Began: 1243 am 1 m				
Time Purged Dry?	Time of Sampling: /30/ am / 6m				
Duplicate Sample? Yes (No) ID:	Sample EH: -/ \(\bar{\chi} \alpha \chi \alpha\)				
Sample Appearance: General: Gear Color:	Voic Phase: NOIC Odor: Scalfa ous				
Specific Temp D. O. Time pH Cond. Cond. mg/L	Turbidity Gallons SEQ NTU Removed # Comments:				
Time pH Cond. °C mg/L 1249 7.18 984 920 .65	Turbidity Gallons SEQ Removed # Comments:				
Time pH Cond. °C mg/L 1249 7.18 984 9.20 .65 1255 7.04 966 9.13 .52	Turbidity Gallons SEQ Removed # Comments:				
Time pH Cond. °C mg/L 1249 7.18 984 920 .65	Turbidity Gallons SEQ Removed # Comments: OOO 1.50 1 OOO 3.00 2				
Time pH Cond. °C mg/L 1249 7.18 984 9.20 .65 1255 7.04 966 9.13 .52	Turbidity Gallons SEQ Removed # Comments: OOO 1.50 1 OOO 3.00 2				
Time pH Cond. °C mg/L 1249 7.18 984 9.20 .65 1255 7.04 966 9.13 .52	Turbidity Gallons SEQ Comments: Comments Co				

Comments:



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Page:

FINAL REPORT COMPLETION DATE: 20 Jul 17 018

Date Reported: 17 Jul 2017

Work Order #: 31-0262 Account #: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT CCR

Service Manager/Date Reviewed Field

18501,2017 Lab Manager/Date Reviewed Chemistry

18 July 2017 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S2A

Report Date: 17 Jul 2017 Lab Number: 17-A25518 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 7 Jun 2017 12:56 Sampled By: MVTL FIELD PERSONNEL Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyze	d	Analyst
MS Water Digestions					8 Jun	17	JMS
Water Digestions					8 Jun	17	JMS
Radium 226	SEE ATTAC	HED			17 Jul	17 7:40	ABL
Radium 228	SEE ATTAC			EPA M9320	17 Jul	17 7:40	ABL
pH, Field	6.86	units	1.00	I-1586-85	7 Jun	17 12:56	DGF
pH pH	* 6.9	units	1.0	SM 4500 H+ B-2000	8 Jun	17 11:50	JFG
Sulfate	147 @	mg/L	5.0	ASTM D516-07	21 Jun	17 7:35	AKF
Chloride	< 3	mg/L	3	SM 4500 C1 E	8 Jun	17 9:39	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun	17 15:47	RMB
Solids, Total Dissolved	619	mg/L	10	SM 2540 C-97	9 Jun	17 13:12	RC
Calcium	142.0	mg/L	0.500	SW6010C	13 Jun	17 17:26	KAM
Lithium	0.033	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM
Barium	0.041	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun	17 12:02	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM
Boron	0.232	mg/L	0.100	SW6010C	12 Jun	17 12:02	KAM
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
	< 0.5	ug/L	0.05	SW6020A	14 Jun	17 16:10	RMV
Beryllium	@See Narr		*140	E113 FE E11			
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun	17 16:10	RMV
T/T/27777777777	< 2.5	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Lead	@See Narr			0.00000			
Man Tarde discussion	< 5 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Molybdenum	< 10 @^	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Selenium	< 0.5	ug/L	0.1	SW6020A	14 Jun	17 16:10	RMV
Thallium	@ See Nar		9.4	2 102(2)(2)(1)			
mi neut de	0.230	mg/L	0.020	EPA 300.0	9 Jun	17 17:08	RC
Fluoride	0.230	11/12	2.744	7.7	200		

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S3AR

Report Date: 17 Jul 2017 Lab Number: 17-A25519 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 12:05
Sampled By: MVTL FIELD PERSONNEL
Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result					Method Reference	Date Analyze	Analyst
MS Water Digestions					8 Jun	17	JMS	
Water Digestions					8 Jun	17	JMS	
Radium 226	SEE ATTAC	HED			17 Jul	17 7:41	ABL	
Radium 228	SEE ATTAC			EPA M9320	17 Jul	17 7:41	ABL	
pH, Field	7.10	units	1.00	I-1586-85	7 Jun	17 12:05	DGF	
pH pH	* 7.1	units	1.0	SM 4500 H+ B-2000	8 Jun	17 11:50	JFG	
Sulfate	106 @	mg/L	5.0	ASTM D516-07	21 Jun	17 7:35	AKF	
Chloride	12.4	mg/L	3.0	SM 4500 Cl E	B Jun	17 9:39	MRW	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun	17 15:47	RMB	
Solids, Total Dissolved	533	mq/L	10	SM 2540 C-97	9 Jun	17 13:12	RC	
Calcium	118.0	mg/L	0.500	SW6010C	13 Jun	17 17:26	KAM	
Lithium	0.022	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM	
Barium	0.042	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM	
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun	17 12:02	KAM	
Cobalt	< 0.005	mg/L	0.005	SW6010C	12 Jun	17 12:02	KAM	
	0.199	mg/L	0.100	SW6010C	12 Jun	17 12:02	KAM	
Boron	< 2.5 @	ug/L	0.5	SW6020A		17 16:10	RMV	
Antimony	< 5 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV	
Arsenic	< 0.5	ug/L	0.05	SW6020A		17 16:10	RMV	
Beryllium	@See Narr		0.00	5,002.00	a a grace	21 24124		
Cadmium	< 0.5 @	nd/F	0.1	SW6020A	14 Jun	17 16:10	RMV	
	< 2.5	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV	
Lead	@See Narr		4.5	20,402.00	27. 2 22.			
Mary 2 colo al les margins	< 5 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV	
Molybdenum	< 10 @^	ug/L	0.5	SW6020A		17 16:10	RMV	
Selenium	< 0.5	ug/L	0.1	SW6020A		17 16:10	RMV	
Thallium		rative	9.1	2.1.20.2011	77 77		447.4	
Fluoride	0.200	mg/L	0.020	EPA 300.0	9 Jun	17 17:08	RC	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S51

Report Date: 17 Jul 2017 Lab Number: 17-A25520 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 12:13
Sampled By: MVTL FIELD PERSONNEL
Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.00

	As Received Result					Date Analyz	Analyst
MS Water Digestions					9 Jun	17	JMS
Water Digestions					8 Jun	17	JMS
Radium 226	SEE ATTAC	HED			17 Jul	17 7:41	ABL
Radium 228	SEE ATTAC			EPA M9320	17 Jul	17 7:41	ABL
	6.89	units	1.00	I-1586-85	7 Jun	17 12:13	JLH
pH, Field	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun		JFG
pH Sulfate	66.8	mg/L	5.0	ASTM D516-07	21 Jun		AKF
Sulfate	16.0	mg/L	3.0	SM 4500 Cl E	8 Jun	17 9:57	MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7	15 Jun	17 15:47	RMB
Mercury	452	mg/L	10	SM 2540 C-97		17 13:12	RC
Solids, Total Dissolved	115.0	mg/L	0.500	SW6010C		17 17:26	KAM
Calcium	0.022	mg/L	0.005	SW6010C		17 12:02	KAM
Lithium	0.071	mg/L	0.005	SW6010C		17 12:02	KAM
Barium	< 0.02 ^	mg/L	0.01	SW6010C		17 12:02	KAM
Chromium	< 0.005		0.005	SW6010C	100 ton 4 (975)	17 12:02	KAM
Cobalt		mg/L	0.1	SW6010C	12 Jun		KAM
Boron	< 0.1	mg/L	0.5	SW6020A		17 17:05	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A		17 17:59	RMV
Arsenic	< 5 @	ug/L	0.05	SW6020A	20 Jun		RMV
Beryllium	< 0.5 @	ug/L		SW6020A		17 17:05	RMV
Cadmium	< 0.5 @	ug/L	0.1		14 Jun		RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	15 Jun	15 THE RESERVE THE PROPERTY OF THE	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A			RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	20 Jun		
Thallium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun		RMV
Fluoride	0.210 @	mg/L	0.020	EPA 300.0	9 Jun	17 17:08	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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 concentration of other analytes
| Due to sample quantity | ### Due to concentration of other analytes
| Due to sample quantity | ### Due to internal standard response
| RETIFICATION: MN LAB # 027-015-125 | WI LAB # 999447680 | ND MICRO # 1013-M | ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S52

Report Date: 17 Jul 2017 Lab Number: 17-A25521 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 13:00
Sampled By: MVTL FIELD PERSONNEL
Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Received Result		Method Method RL Reference		Date Analyzed	Analyst
MC Water Disections	40 % 1 1 1				9 Jun 17	JMS
MS Water Digestions					9 Jun 17	JMS
Water Digestions Radium 226	SEE ATTAC	HED			17 Jul 17 7:	41 ABL
	SEE ATTAC			EPA M9320	17 Jul 17 7:	41 ABL
Radium 228	6.90	units	1.00	1-1586-85	7 Jun 17 13:	00 JLH
pH, Field	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun 17 11:	50 JFG
pH	64.5	mg/L	5.0	ASTM D516-07	21 Jun 17 7:	35 AKF
Sulfate	15.2	mg/L	3.0	SM 4500 Cl E	8 Jun 17 9:	57 MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17 15:	47 RMB
Mercury	449	mg/L	10	SM 2540 C-97	9 Jun 17 13:	12 RC
Solids, Total Dissolved	102.0	mg/L	0.500	SW6010C	14 Jun 17 11:	23 KAM
Calcium	0.019	mg/L	0.005	SW6010C	14 Jun 17 11:	23 KAM
Lithium	0.104	mg/L	0.005	SW6010C	14 Jun 17 11:	23 KAM
Barium	< 0.01	mg/L	0.01	SW6010C	14 Jun 17 11:	23 KAM
Chromium	< 0.005	mg/L	0.005	SW6010C	14 Jun 17 11:	23 KAM
Cobalt	< 0.1	mg/L	0.1	SW6010C	14 Jun 17 11:	23 KAM
Boron	< 2.5 @	ug/L	0.5	SW6020A	14 Jun 17 17:	05 RMV
Antimony	< 5 @	ug/L	0.5	SW6020A	15 Jun 17 17:	59 RMV
Arsenic	< 0.5 @	ug/L	0.05	SW6020A		33 RMV
Beryllium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun 17 17:	05 RMV
Cadmium	< 2.5 @	ug/L	0.5	SW6020A	14 Jun 17 17:	05 RMV
Lead	< 5 @	ug/L	0.5	SW6020A	15 Jun 17 17:	59 RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A		33 RMV
Selenium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun 17 17:	05 RMV
Thallium Fluoride	0.230	mg/L	0.020	EPA 300.0	9 Jun 17 17:	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S10R

Report Date: 17 Jul 2017 Lab Number: 17-A25522 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 11:38

Sampled By: MVTL FIELD PERSONNEL Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MC Natar Discretions					9 Jun 17	JMS
MS Water Digestions Water Digestions					9 Jun 17	JMS
Radium 226	SEE ATTAC	HED			17 Jul 17 7:41	ABL
	SEE ATTAC			EPA M9320	17 Jul 17 7:41	ABL
Radium 228	6.83	units	1.00	1-1586-85	7 Jun 17 11:38	JLH
pH, Field	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun 17 11:50	JFG
pH	82.1 @	mq/L	5.0	ASTM D516-07	21 Jun 17 7:35	AKF
Sulfate	11.7	mg/L	3.0	SM 4500 Cl E	8 Jun 17 9:57	MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17 15:47	RMB
Mercury	528	mg/L	10	SM 2540 C-97	9 Jun 17 13:12	RC
Solids, Total Dissolved	110.0	mg/L	0.500	SW6010C	14 Jun 17 11:23	KAM
Calcium	0.021	mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Lithium	0.097	mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Barium	< 0.01	mg/L	0.01	SW6010C	14 Jun 17 11:23	KAM
Chromium		mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Cobalt	< 0.005		0.1	SW6010C	14 Jun 17 11:23	KAM
Boron	< 0.1	mg/L	0.5	SW6020A	14 Jun 17 17:05	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	15 Jun 17 17:59	RMV
Arsenic	< 5 @	ug/L	0.05	SW6020A	20 Jun 17 9:33	RMV
Beryllium	< 0.5 @	ug/L		SW6020A	14 Jun 17 17:05	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun 17 17:05	RMV
Lead	< 2.5 €	ug/L	0.5		15 Jun 17 17:59	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	20 Jun 17 9:33	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	14 Jun 17 17:05	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	9 Jun 17 17:08	RC
Fluoride	0.200	mg/L	0.020	EPA 300.0	9 Jun 1/ 1/:08	210

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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 sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S13

Report Date: 17 Jul 2017 Lab Number: 17-A25523 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 11:32
Sampled By: MVTL FIELD PERSONNEL
Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyze	Analyst	
MS Water Digestions					9 Jun	17	JMS
Water Digestions					9 Jun	17	JMS
Radium 226	SEE ATTAC	HED			17 Jul	17 7:41	ABL
Radium 228	SEE ATTAC			EPA M9320	17 Jul	17 7:41	ABL
pH, Field	7.04	units	1.00	1-1586-85	7 Jun	17 11:32	JLH
	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun	17 11:50	JFG
pH Sulfate	64.1 @	mg/L	5.0	ASTM D516-07	21 Jun		AKF
	8.0	mg/L	3.0	SM 4500 Cl E	8 Jun	17 9:57	MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7		17 15:47	RMB
Mercury	479	mg/L	10	SM 2540 C-97		17 13:12	RC
Solids, Total Dissolved	113.0	mg/L	0.500	SW6010C		17 11:23	KAM
Calcium	0.023	mg/L	0.005	SW6010C		17 11:23	KAM
Lithium	0.023	mg/L	0.005	SW6010C	14 Jun	17 11:23	KAM
Barium	< 0.01	mg/L	0.01	SW6010C	14 Jun	17 11:23	KAM
Chromium	< 0.005	mg/L	0.005	SW6010C		17 11:23	KAM
Cobalt	< 0.1	mg/L	0.1	SW6010C		17 11:23	KAM
Boron	< 2.5 @	ug/L	0.5	SW6020A	14 Jun	17 17:05	RMV
Antimony	< 5 @	ug/L	0.5	SW6020A		17 17:59	RMV
Arsenic	< 0.5 @	ug/L	0.05	SW6020A	20 Jun		RMV
Beryllium	< 0.5 @		0.1	SW6020A		17 17:05	RMV
Cadmium		ug/L	0.5	SW6020A		17 17:05	RMV
Lead		ug/L	0.5	SW6020A		17 17:59	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	20 Jun		RMV
Selenium	< 5 @	ug/L	0.1	SW6020A		17 17:05	RMV
Thallium	< 0.5 @	ug/L		EPA 300.0		17 17:08	RC
Fluoride	0.240	mg/L	0.020	HEA SOULD	2 our	27.00	200

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT CCR

Sample Description: S14R

Report Date: 17 Jul 2017 Lab Number: 17-A25524 Work Order #: 31-0262 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Jun 2017 12:38
Sampled By: MVTL FIELD PERSONNEL
Date Received: 7 Jun 2017 16:47

PO #: 48679

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					9 Jun 17	JMS
Water Digestions					9 Jun 17	JMS
Radium 226	SEE ATTAC	HED			17 Jul 17 7:42	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	17 Jul 17 7:42	ABL
pH, Field	7.04	units	1.00	I-1586-85	7 Jun 17 12:38	DGF
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun 17 11:50	JFG
Sulfate	97.4 @	mg/L	5.0	ASTM D516-07	21 Jun 17 7:35	AKF
Chloride	5.7	mg/L	3.0	SM 4500 C1 E	8 Jun 17 9:57	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17 15:47	RMB
Solids, Total Dissolved	561	mg/L	10	SM 2540 C-97	9 Jun 17 13:12	RC
Calcium	131.0	mg/L	0.500	SW6010C	14 Jun 17 11:23	KAM
Lithium	0.028	mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Barium	0.078	mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	14 Jun 17 11:23	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	14 Jun 17 11:23	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	14 Jun 17 11:23	KAM
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Jun 17 17:05	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	15 Jun 17 17:59	RMV
Beryllium	< 0.5 @	ug/L	0.05	SW6020A	20 Jun 17 9:33	RMV
	< 0.5 @	ug/L	0.1	SW6020A	14 Jun 17 17:05	RMV
Cadmium	< 2.5 @	ug/L	0.5	SW6020A	14 Jun 17 17:05	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	15 Jun 17 17:59	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	20 Jun 17 9:33	RMV
Selenium	< 0.5 @	ug/L	0.1	SW6020A	14 Jun 17 17:05	RMV
Thallium Fluoride	0.220	mg/L	0.020	EPA 300.0	9 Jun 17 17:08	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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 sample quantity
CERTIFICATION: MN LAB # 027-015-125

WI LAB # 999447680

ND MICRO # 1013-M ND WW/DW # R-040



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Date Reported: 17 Jul 2017

Work Order #: 201731-0262 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT CCR

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES:
Beryllium recovery was elevated in the laboratory control spike associated with samples 17-A25518 and 17-A25519. Data that was below the reporting limit was reported.

The internal standard counts for lead and thallium were outside of limits in the laboratory control spike associated with samples 17-A25518 and 17-A25519. Data was reported based on the acceptabe recovery of lead and thallium in the laboratory control spike.

No other problems were encountered with these analyses.



Date: 7/10/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Hoot Lake

Lab Order:

S1706215

Report ID: S1706215001

Samples S10R A25522, S13 A25523, S14R A25524, S2A A25518, S3AR A25519, S51 A25520, and S52 A25521 were received on June 9, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All



ph: (307) 672-8945 1673 Terra Avenue, Sheridan, Wyoming 82801

Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID: ClientSample ID: S2A A25518

S1706215-001

COC:

WEB

7/10/2017 Date Reported S1706215001 Report ID

WorkOrder:

S1706215

CollectionDate: 6/7/2017 12:56:00 PM

DateReceived: 6/9/2017 11:43:00 AM

FieldSampler:

Water Matrix:

Comments

Comments			***************************************							
Analyses	Result	ılt Units		RL	Method	Date Analyzed/Init				
Radionuclides - Total										
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 710	MB			
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 710	MB			

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND Spike Recovery outside accepted recovery limits RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company: MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName: Ottertail Power Hoot Lake

Lab ID: \$1706215-002 **ClientSample ID:** \$3AR A25519

COC: WEB

 Date Reported
 7/10/2017

 Report ID
 S1706215001

WorkOrder: S1706215

CollectionDate: 6/7/2017 12:05:00 PM **DateReceived:** 6/9/2017 11:43:00 AM

FieldSampler:

Matrix: Water

Comments

Comments										
Analyses	Result	Units Qual		RL	Method	Date Analyzed/Init				
Radionuclides - Total										
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 1013	MB			
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 1013	MB			

These results apply only to the samples tested.

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

M Value exceeds Monthly Ave or MCL or is less than LCL

O Outside the Range of Dilutions

X Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1706215-003 ClientSample ID: S51 A25520

COC:

WEB

7/10/2017 Date Reported

Report ID

S1706215001

WorkOrder:

S1706215

Water

CollectionDate: 6/7/2017 12:13:00 PM DateReceived: 6/9/2017 11:43:00 AM

FieldSampler:

Matrix:

Comments			·····							
Analyses	Result	Result Units		RL	Method	Date Analyzed/Init				
Radionuclides - Total										
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 1316	MB			
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 1316	MB			

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Е Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1706215-004 ClientSample ID: S52 A25521

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706215001

WorkOrder:

S1706215

CollectionDate: 6/7/2017 1:00:00 PM

DateReceived:

6/9/2017 11:43:00 AM

FieldSampler:

Matrix:

Water

Commonte

Analyses	nalyses Result		Result Units Qual				Method	Date Analyzed/Init			
Radionuclides - Total											
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB				
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB				
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 1619	MB				
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 1619	MB				

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions 0

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1706215-005 ClientSample ID: S10R A25522

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706215001

WorkOrder:

S1706215

CollectionDate: 6/7/2017 11:38:00 AM

DateReceived:

6/9/2017 11:43:00 AM

FieldSampler: Matrix:

Water

Comments										
Analyses	Result	lt Units		RL	Method	Date Analyzed/Init				
Radionuclides - Total										
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 1921	MB			
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 1921	MB			

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 7



Sample Analysis Report

MVTL Inc Company:

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1706215-006 ClientSample ID: S13 A25523

COC:

WEB

7/10/2017 Date Reported S1706215001 Report ID

WorkOrder:

S1706215

CollectionDate: 6/7/2017 11:32:00 AM 6/9/2017 11:43:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments										
Analyses	Result	Result Units		RL	Method	Date Analyzed/Init				
Radionuclides - Total										
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB			
Radium 228	ND	pCi/L		2	Ga-Tech	07/06/2017 2224	MB			
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/06/2017 2224	MB			

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions O

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1706215-007 ClientSample ID: S14R A25524

COC:

WEB

7/10/2017 Date Reported

Report ID

S1706215001

WorkOrder:

S1706215

CollectionDate: 6/7/2017 12:38:00 PM

6/9/2017 11:43:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments

Comments								
Analyses	Result	Units Qual	RL	Method	Date Analyzed/Init			
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	07/07/2017 128	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/07/2017 128	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL М

Outside the Range of Dilutions 0

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 7



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc Date: 7/10/2017

Work Order: \$1706215 Report ID: \$1706215001

Project: Ottertail Power Hoot Lake

Radium 228 by Ga/Tech	Sample Type MBLK		Units:	pCi/L			
MB-445 (07/04/17 18:34)	RunNo: 147649	PrepDa	te: 06/14	1/17 12:00	Bato	hID 13385	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1					
Radium 228 by Ga/Tech	Sample Type LCS		Units:	pCi/L			
LCS-445 (07/04/17 15:31)	RunNo: 147649	PrepDa		1/17 12:00		hID 13385	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	44	1	39.3		112	65.9 - 132	
Radium 228 by Ga/Tech	Sample Type MS		Units:	pCi/L			
MS-445 (07/04/17 21:37)	RunNo: 147649	PrepDa	te: 06/14	1/17 12:00	Bato	hID 13385	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	42	1	39.1	2	104	50 - 139	
Radium 228 by Ga/Tech	Sample Type MSD		Units:	pCi/L			
MSD-445 (07/05/17 00:40)	RunNo: 147649	PrepDa	ite: 06/14	1/17 12:00	Bate	chID 13385	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	47	1	42	11.4	117	20	
Radium 226 in Water -	Sample Type MBLK		Units:	pCi/L			
MB-1762 (06/21/17 10:48)	RunNo: 147141	PrepDa	ite: 06/14	1/17 0:00	Bate	chID 13329	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					
Radium 226 in Water -	Sample Type LCS		Units:	pCi/L			
LCS-1762 (06/21/17 10:48)	RunNo: 147141	PrepDa	ite: 06/14	4/17 0:00	Bate	chID 13329	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.7	0.2	6.41		89.1	67.1 - 122	
Radium 226 in Water -	Sample Type LCSD		Units:	pCi/L			
LCSD-1762 (06/21/17 10:48)	RunNo: 147141	PrepDa	ite: 06/14	4/17 0:00	Bate	chID 13329	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.0	0.2	5.7	5.31	93.9	20	
Radium 226 in Water -	Sample Type MS		Units:	pCi/L			
S1706214-002AMS (06/21/17 10:48)	RunNo: 147141	PrepDa	ite: 06/14	4/17 0:00	Bate	chID 13329	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	12	1	12.8	ND	85.8	65 - 131	

Qualifiers: B

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
 - Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

MVTL

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

MEMBER ACIL

Page: 1 of 2

Quality Control Report

Lab IDs: 17-A25518 to 17-A25524 Project: HOOT LAKE PLANT CCR Work Order: 201731-0262

Lab IDs: 17-A25518 to 17-A25524 Project: HOOT LAKE PLANT CCR						R	Work Order: 201731-0262										
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 25.0	99 98	85-115 85-115		a25082qc 17A25524q	< 0.5 < 2.5	25.5 26.1	102 104	75-125 75-125	25.5 26.1	25.5 25.5	102 102	0.0 2.3	10 10	98 98	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	99 101	85-115 85-115	25.0 25.0	a25082qc 17A25524q	2.64 < 5	29.1 29.1	106 116	75-125 75-125	29.1 29.1	28.8 29.9	105 120	1.0 2.7	10 10	100 100	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000 1.000	98 100	85-115 85-115	1.00 1.00	17A25012q 17A25523q	0.068 0.088	1.040 1.100	97 101	75-125 75-125	1.040 1.100	1.070 1.020	100 93	2.8 7.5	10 10	100 99	90-110 90-110	< 0.005 < 0.005
Beryllium ug/L	2.50 2.50	121 102	85-115 85-115	2.50 2.50	a25082qc 17A25524q	< 0.5 < 0.5	2.47 2.50	99 100	75-125 75-125	2.47 2.50	2.50 2.41	100 96	1.2 3.7	10 10	93 95	90-110 90-110	< 0.05 < 0.05
Boron mg/L	1.000 1.000	98 101	85-115 85-115	1.00 1.00	17A25012q 17A25523q	< 0.1 < 0.1	1.000 1.100	100 110	75-125 75-125	1.000 1.100	1.040 1.020	104 102	3.9 7.5	10 10	96 97	90-110 90-110	< 0.1 < 0.1
Cadmium ug/L	5.00 5.00	100 102	85-115 85-115	5.00 5.00	a25082qc 17A25524q	< 0.1 < 0.5	5.14 5.28	103 106	75-125 75-125	5.14 5.28	5.09 5.11	102 102	1.0 3.3	10 10	102 102	90-110 90-110	< 0.1 < 0.1
Calcium mg/L	50.00 50.00	110 104	85-115 85-115	50.0 50.0	a25012qc 17A25523q	79.60 113.0	139.0 162.0	119 98	75-125 75-125	139.0 162.0	140.0 151.0	121 76	0.7 7.0	10 10	106 102	90-110 90-110	< 0.5 < 0.5
Chloride mg/L	-	-	-	60.0 60.0 60.0	17-A25519 17-A25542 17-A25097	12.4 12.1 78.1	72.5 71.8 143	100 100 108	85-121 85-121 85-121	72.5 71.8 143	72.5 69.4 137	100 96 98	0.0 3.4 4.3	5 5 5	96 96	90-110 90-110	< 3 < 3
Chromium mg/L	1.000 1.000	101 102	85-115 85-115		17A25012q 17A25523q	< 0.01 < 0.01	0.981 1.040	98 104	75-125 75-125	0.981 1.040	1.020 0.964	102 96	3.9 7.6	10 10	102 103	90-110 90-110	< 0.01 < 0.01
Cobalt mg/L	1.000 1.000	101 102	85-115 85-115		17A25012q 17A25523q	< 0.005 < 0.005	0.956 0.984	96 98	75-125 75-125	0.956 0.984	0.988 0.915	99 92	3.3 7.3	10 10	100 101	90-110 90-110	< 0.005 < 0.005
Fluoride mg/L	-	-	-	0.20	17-A25523	0.240	0.450	105	75-125	0.450	0.450	105	0.0	10	100	90-110	< 0.02
Lead ug/L	25.0 25.0	100 100	85-115 85-115		a25082qc 17A25524q	1.78 < 2.5	28.1 26.2	105 105	75-125 75-125	28.1 26.2	27.7 25.4	104 102	1.4 3.1	10 10	101 101	90-110 90-110	< 0.5 < 0.5
Lithium mg/L	1.000 1.000	99 102	85-115 85-115	1.00 1.00	a25012qc 17-A25523	0.007 0.023	0.979 1.050	97 103	75-125 75-125	0.979 1.050	1.000 0.971	99 95	2.1 7.8	10 10	105 100	90-110 90-110	< 0.005 < 0.005
Mercury ug/L	-	-	-	0.10	17-A25524	< 0.005	0.093	93	63-111	0.093	0.104	104	11.2	18	99	76-113	< 0.005 < 0.005

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER ACIL

Page: 2 of 2

Quality Control Report

Lab IDs: 17-A25518 to 17-A25524 Project: HOOT LAKE PLANT CCR Work Order: 201731-0262

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	1661,5465	Known Rec (%)	Known % Rec Limits	Method Blank
Molybdenum ug/L	25.0 25.0	102 102	85-115 85-115	25.0 25.0	a25082qc 17A25524q	1.20	26.6 29.5	102 118	75-125 75-125	26.6 29.5	26.2 28.8	100 115	1.5 2.4	10 10	98 103	90-110 90-110	< 0.5 < 0.5
pH units	3	-	-	-	-	100	A	•	14.	7.0	7.1	4	1.4	2.5	100	90-110	-
Selenium ug/L	25.0 25.0	104 103	85-115 85-115	25.0 25.0	a25082qc 17A25524q	<1 <5	27.0 25.7	108 103	75-125 75-125	27.0 25.7	27.5 26.8	110 107	1.8 4.2	10 10	107 100	90-110 90-110	11616
Solids, Total Dissolved mg/L	-	1		÷					3	1170 561	1170 550		0.0 2.0	8	93	85-115	< 10
Sulfate mg/L	120	W	14	500	17-A25524	97.4	647	110	74-128	647	647	110	0.0	5	99	80-120	< 5
Thallium ug/L	5.00 5.00	98 100	85-115 85-115	5.00 5.00	a25082qc 17A25524q	< 0.1 < 0.5	5.24 5.26	105 105	75-125 75-125	5.24 5.26	5.18 5.12	104 102	1.2 2.7	10 10	102 102	90-110 90-110	< 0.1 < 0.1

The beryllium LCS recovery was outside the acceptance limits, see narrative.

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 Date 7 Jun 17

Pages 1-11

Project Na	me:	Otter Tail Po	1 No. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Project	Type:	Hoot Lake Pla	nt			Naı	me (of Sa	amp	lers	: 1	Per!	44	F	- C.	4.77	
Report To: Attn: Address: Phone:	Paul Vuko P.O. Box	Power Company onich 496 alls, MN 56038-04		Carbon Attn: Address						Wo	rk C	Num Order mbe	Nu		200				ellingin 262		
		Sample Inform	mation								E	ott	le T	уре	•					Analysis	124
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	Voc Set	1000 none	1000 HIVO3	500 HNO3	- 1	500 HNO3	Filler? Y or A.	500H2SO4	1000 Amber 11	500 NaOH 12504	Other: 150 Hag	Other 150 M.	Analysis Required		
A25518	S2A	7	7 Tynei7	1254	GW			1	2	1	n								see attachm	nent	
19	S3AR			1205	GW			1	2	1	n			1							
20	S51			1213	GW			1	2	1	n										
21	S52			1300	GW			1	2	1	n										
22	S10R			1138	GW			1	2	1	n										
23	S13			1132	GW			1	2	1	n										
24	S14R	- (Ţ	1238	GW			1	2	1	n										
														1							

Comments: CCR wells Work Order #2

Samples Relinqui	ished By:	F-1		Samples Received B	y: 11- Allde	
Date: 73	Ture 17	Time: 1647	Temp: OO	Date: 7 Jun 17	Time: 1647	Temp: 0-0C
Samples Relinqui	ished into:	Fridge Logi	n Cart Other:			
Samples Relinqui	shed By:			Samples Received B	y:	
Date:		Time:	Temp:	Date:	Time:	Temp:
Deliver	Samplers	Other:		Seal Number(s) - If U	Ised	
Transp	Ambient	QCB	Other:	Seals Intact?	Yes No	4/



Hoot Lake Site CCR Background Sampling

Site	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (gal/minute)	Goes Dry?
S2A	HLP H, HLP I	79.63	2	1273,776	Bladder	Yes	< 0.25	No
S3AR	HLP H, HLP I	78.42	2	1271,562	Bladder	Yes	< 0.25	No
S51	HLP H, HLP I	55.6	2	1286.904	Bladder	Yes	< 0.25	No
S52	HLP H, HLP I	88.3	2	1286.623	Bladder	Yes	< 0.25	No
S10R	HLP H, HLP I	57.00	2	1281.47	Bladder	Yes	< 0.25	No
S13	HLP H, HLP I	90.19	2	1296.423	Bladder	Yes	< 0.25	No
S14R	HLP H, HLP I	70.86	2	1280.61	Bladder	Yes	< 0.25	Yes

All CCR wells should be low flow purges with turbidity <10 NTU

HLP "H" Monitoring Parameters

CCR - Appendix III Detection Monitoring Field Parameters

pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pН

Sulfate

Dissolved Solids, Total

1-LiteR

HLP "I" Monitoring Parameters

CCR - Appendix IV - Assessment Monitoring

~Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228 ~ Z - 1000 HNO 3

So Haro

Groundwater Asso	essment			Site:	Otterta	il Power	Co./Hoot Lake
Sampling Personnel:			·	Facility ID:	SW-21	i1	
Dusta	Farasyn			Date: 7	June 17		
		_		Unique Statio			
		_		Sample ID:	S-2A		
Well Condition							
Well Locked?	Yes No	_		Protective Po			No
Well Labeled?	(es No	_		State ID Tag' Grout Seal In			No No
Casing Straight?	Kes No	oes not	Fit ove				110
Repairs Necessary: Well Information	८५१ वे	ore liet	74 000	s chenicopa	rd Dumf	,	
Well Depth:	79.61			Well Casing I	Elevation:		1273.776
Constructed Depth:	79.63	-		Static Water		· - ·	76
Casing Diameter:	2"	-		Previous Stat		7.6¢	
Water Level Before Pu	7-7-4-0	- ©			After Sample:	Beb.	2 Permo
	.49	Gallons	_	Measuremen		Elec. W	
Sampling Informati	on			_			
Weather Conditions:	Temp:	7°	Wind:	tV	Sky:	My.	Cloudy
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		
Sampling Method: Dedicated Equipment:	Grundfos No	Bladder SS/T	Disp. Bailer	Whale Pumping Rat	e: <i>O</i> (え		gpm
		Bladder SS/T	Disp. Bailer		e: <u>0,2</u> Began: <i>1,25</i>	>	gpm am / ਿਸੇ
Dedicated Equipment:	Yes No	Fladder S87	Disp. Bailer	Pumping Rat	e: <u>の</u> は Began: <i>)以</i> が	>	
Dedicated Equipment: Well Purged Dry?	Yes No	Fladder S8/1		Pumping Rat Time Pump E Time of Sam Sample EH:	e: <u>0,2</u> Began: <i>1,25</i>	>	am / Çim
Dedicated Equipment: Well Purged Dry? Time Purged Dry?	Yes (No)		Color: No.	Pumping Rat Time Pump E Time of Sam Sample EH:	e: 0,2 Began: 1,250 pling: 1,250) ?	am / Çim
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Yes (No) Yes (No) General:	ID:		Pumping Rat Time Pump E Time of Sam Sample EH:	e: 0,2 Began: 1,250 pling: 1,250) ?	am / Quin am / Quin
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample?	Yes (No)	- - _ID:	Color: No:	Pumping Rat Time Pump E Time of Sam Sample EH: Phase	e: 0,250 Began: 1,250 pling: 1,250 13,5	SEQ	am / Quin am / Quin
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Yes (No) Yes (No) Yes (No) General:	ID:	Color: No:	Pumping Rat Time Pump E Time of Sam Sample EH: Phase	e: 0,250 Began: 1,250 pling: 1250 13.5 : Ware Gallons	SEQ	am / PAPP am / PAPPP Odor: Nove
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time pH 1252 6.90	Yes (No) Yes (No) General: Specific Cond.	ID:	Color: No:	Pumping Rat Time Pump E Time of Sam Sample EH: Phase Turbidity NTU	e: 0,250 Began: 1,250 pling: 1,250 13.5 : Nane Gallons Removed	SEQ #	am / PAPP am / PAPPP Odor: Nove
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time pH 1252 6.90 1354 6.83	Yes (No) Yes (No) Yes (No) General: Specific Cond.	ID: Class C	Color: No: D. O. mg/L 2. 9.5	Pumping Rat Time Pump B Time of Sam Sample EH: Phase Turbidity NTU 4.7	e: 0,250 Began: 1,250 pling: 1,250 13.5 : Nane Gallons Removed	SEQ #	am / PAPP am / PAPPP Odor: Nove
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time pH 1252 6.90 1254 6.83	Yes (No) Yes (No) Yes (No) General: Specific Cond. 1051	ID:	Color: No: D. O. mg/L 2.95 2.82	Pumping Rat Time Pump B Time of Sam Sample EH: Phase Turbidity NTU 4.7 2.2	e: 0,250 Began: 1,250 pling: 1250 13.5 : Nane Gallons Removed	SEQ # 1 2	am / PAPP am / PAPPP Odor: Nove
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: Time pH 1252 6.90 1354 6.83	Yes (No) Yes (No) Yes (No) General: Specific Cond. 1051	ID:	Color: No: D. O. mg/L 2.95 2.82	Pumping Rat Time Pump B Time of Sam Sample EH: Phase Turbidity NTU 4.7 2.2	e: 0,250 Began: 1,250 pling: 1250 13.5 : Nane Gallons Removed	SEQ # 1 2 3	am / PAPP am / PAPPP Odor: Nove

Comments:

Groundwater Assessment		Site:	Ottertail Po	ower Co./Hoot Lake
Sampling Personnel:	1	Facility ID:	SW-211	
Dusty Farasyn		Date: 7 Jun	e17	
, ,	<u>. l</u>	Jnique Station ID	674671	
	<u>.</u>	Sample ID:	S-3A-R	
Well Condition				
Well Locked? Yes No	_	Protective Posts?		No
Well Labeled? Yes No Casing Straight? Yes No		State ID Tag? Grout Seal Intact	Yes	No (No)
		Glout Sear Illact	162	<u>(NO</u>
Repairs Necessary: Well Information				
70 40				4074 500
Well Depth: 78,40		Well Casing Elev		1271.562
Constructed Depth: 78.42	<u> </u>	Static Water Elev		
Casing Diameter: 2"	<u>_</u>	Previous Static:	1203.7	7G
Water Level Before Purge: んぞん	<u>.</u>	Water Level After	Sample: 6	2.16
Well Volume: 1,67 Gallon:	<u> </u>	Measurement Me	thod: Ele	c. WLD Steel Tape
Sampling Information			ρ.	
Weather Conditions: Temp: 70	Wind: L	4 V	Sky:	y. Cloudy
Sampling Method: Grundfos Bladder	SSA Disp. Bailer \	Whale Grab	Other:	,
Dedicated Equipment: (Yes) No	<u>_</u>	Pumping Rate:	0.25	gpm
Well Purged Dry? Yes 🔞		Time Pump Bega	in: <i>114</i> 4	(am) / pm
Time Purged Dry?		Time of Sampling	1: 1205	 +@
Duplicate Sample? Yes (No) ID:		Sample EH: 🕒	12.0	
Sample Appearance: General: Liequ	Color: No	Phase:	14. Sedi	Odor: None
Specific Temp	D. O.	Turbidity Gal	lons SE	o l
Time pH Cond. °C		, ,	noved #	Comments:
1151 7.12 934 10.0		29.5 1	.75 1	
1158 7.14 932 9.5			3.5 2	
1205 7.10 930 9.0			125 3	
			4	
			5	
Stabilized? (Yes No	Amount Wate	r Pemoved:	5,25	Gallons
-	Amount water	i Nemoveu. 🗸	'N)	Galions
Comments:				

Groundwater Assessment		Site:	Ottertail	Power Co./	Hoot Lake		
Sampling Personnel:		Facility ID:	SW-211				
		Date: 'ブ`	Jun 17				
		Unique Station I	D: 814830	,			
		Sample ID:	S-51				
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		Protective Posts State ID Tag? Grout Seal Intac	(Yes)	No No No	-		
Well Information							
Well Depth: 55.60		Well Casing Ele	vation:	1286	.9		
Constructed Depth:		Static Water Ele	vation:	337.09	}		
Casing Diameter: 2"		Previous Static: \a36.89					
Water Level Before Purge: 49.8		Water Level After Sample: 49,84/					
Well Volume: 7.94 Ga	llons	Measurement M	ethod: E	Elec. WLI)	Steel Tape		
Sampling Information	,		~	u ni	٨		
Weather Conditions: Temp: 720	Wind: 41	<i>)</i>	Sky: 🌇	Artly Clo	udy		
	dder SS/T Disp. Bailer	Whale Gra			•/		
Dedicated Equipment: Yes No		Pumping Rate:	0.25	gpm			
Well Purged Dry? Yes (No)		Time Pump Began: 11 53 (am) / pm					
Time Purged Dry?		Time of Sampling: 1313 am 1/pm					
Duplicate Sample? Yes No ID:		Sample EH:	1 ///	<u> </u>	4		
Sample Appearance: General: 91 ghlu	Cloydy, Color: NON	, Phase: 스	t Sedime	WN Odor	: NONE		
, , ,	mp D.O.	1 1	l l	SEQ			
Time pH Cond. OC			moved #	# Com	ments:		
	.99 0.92	195.8	1 1	1			
	186 0.72	1223		2			
1205 689 782 8	ברוס לדו	69,8	3 8	3			
1209 689 785 8	.75 0,69	43.9		4			
	377 0.69	25,4		5			
Stabilized? Yes (No)	Amount Wat	er Removed:	S	Gallo	ons		
Comments:							

Groundwater Assessment	Site:	Otte	rtail Power Co./Hoot Lak	(e			
Sampling Personnel:	Facilit	Facility ID: SW-211					
Jaff Hollman	Date:	7 Jun 1	7				
•	Uniqu	e Station ID: 822	155				
	Samp	e ID: S-52	2				
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	State	tive Posts? (Yes D Tag? (Yes Seal Intact? (Yes	No				
Well Information							
Well Depth: 88.30	Well (asing Elevation:	1286.62				
Constructed Depth:	Static	Water Elevation:	1216.16	1216.16			
Casing Diameter: 2"	Previo	Previous Static: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
Water Level Before Purge: 70.46	Water	Water Level After Sample: 70.40					
Well Volume: 2.91 Gallons	Meas	rement Method:	Elec. WLI Steel T	аре			
Sampling Information Weather Conditions: Temp: 7,0° Sampling Method: Grundfos Bladder S	Wind: L+V	Sky Grab Othe		y			
Dedicated Equipment: (Yes) No			25 gpm				
Well Purged Dry? Yes (No)			A.	pm)			
Time Purged Dry?	Time	Time of Sampling:) 3,00 am 10m					
Duplicate Sample? Yes (No) ID:	<u>Samp</u>	le EH: - ((o2: 6				
Sample Appearance: General: Cleas	Color: NOME,	Phase: >	e Odor: Suffi	wo			
12 Specific Temp Time pH Cond. °C	D. O. Turbio	lity Gallons Removed	SEQ # Comments:				
1236 6.91 777 8.65	5 0.27 0) 3	1				
1248 691 777 8.6	7 0.28 0	6	2				
1300 6,90 777 8,6	1	9	3				
			4				
			5				
Stabilized? Yes No	Amount Water Ren	noved: 9.0	Gallons				
Comments:	Amount water Ner	10,000	Juliono				

Groundwater Assessment		Site:	Otterta	ail Powe	er Co./Hoot Lake		
Sampling Personnel:		Facility ID:	SW-2	11			
Till Holfman		Date:	7 Jun 1	7			
		Unique Statio	on ID: 🔞 🕽	6341			
		Sample ID:	S-10R				
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		Protective Po State ID Tag Grout Seal In	? (Yés)		No No No		
Well Information							
Well Depth: 👸の、ほろ		Well Casing	Elevation:	12	81,47		
Constructed Depth:		Static Water	Elevation:	130	1.53		
Casing Diameter: 2"		Previous Sta	tic:	120	9.45		
Water Level Before Purge: 7),94		Water Level After Sample: 7/. 14					
Well Volume: \4\ Gallons	_	Measuremer	nt Method:	Elec.	WLI Steel Tape		
Sampling Information Weather Conditions: Temp: 72	Wind: ムナ	U	Sky:	Partli	cloudy		
Sampling Method: Grundfos (Bladder SS/T)	Disp. Bailer	Whale	Grab Other:		_		
Dedicated Equipment: Yes No		Pumping Rat		<u> </u>	gpm am)/ pm		
Well Purged Dry? Time Purged Dry? Yes (No)		Time Pump I		38 38	(am)/ pm		
Duplicate Sample? Yes (No ID:		Sample EH:	-46.	9	Carry pin		
Sample Appearance: General: Claus	Color: No		None		Odor: NONE		
Cond.	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:		
1124 6.27 834 9.37	0.90	10.8	1.5	1			
1132 6.79 835 936	0.84	9,1	3.0	2			
1/38 6.85 838 4.32	0.74	7,4	4,5	3			
				4			
				5			
Stabilized Yes No	Amount Wa	ter Removed:	4.5		Gallons		
Comments:							

Groundwater Assessment	Site:	Ottert	ail Powe	r Co./Hoo	t Lake
Sampling Personnel:	Facility	ID: SW-2	211		
Dusty Farasyn	Date:	Ture 7			
	Unique	Station ID:	632	1810	
	Sample	ID: S-13			
Well Condition					
Well Locked? (es No	Protecti	ve Posts? (Es)		No	
Well Labeled? Yes No	State ID		,	No	
Casing Straight? (es No	Grout S	eal Intact? (es)		No	
Repairs Necessary:					
Well Information		" , 			
Well Depth: 90.27	Well Ca	sing Elevation:		1296.423	
Constructed Depth: 90.19	Static V	Vater Elevation: 🖊	210.6	73	
Casing Diameter: 2"	Previou	s Static: 1210). BI		
Water Level Before Purge: 85.75	Water L	evel After Sample:	75.	75	
Well Volume: 0.73 Gallons	Measur	ement Method:	Elec. V	VLI) Ste	eel Tape
Sampling Information					
Weather Conditions: Temp: 70	Wind: L+V	Sky:	PHy.	Churcy	
Sampling Method: Grundfos Bladder SS	Disp. Bailer Whale	Grab Other:			
Dedicated Equipment: Ves No	Pumpin	g Rate: 0.25		gpm	
Well Purged Dry? Yes No	Time Po	ump Began: ガスヨ	3	(ấn) / pm
Time Purged Dry?	Time of	Sampling: 1137	₹	e ñ	🕽 / pm
Duplicate Sample? Yes (No) ID:	Sample	EH: -22.€			
Sample Appearance: General: Clea	Color: None F	Phase: None		Odor:5).	5415400
Specific Temp	D. O. Turbidit	y Gallons	SEQ		
Time pH Cond. °C	mg/L NTU	Removed	#	Commen	ts:
1126 7.09 856 10.53	5 2.19 5.9	0.75	1		
1129 7.06 856 10.50			2	·	,
1132 7.04 860 10.3			3		
			4		
			5		
Stabilized? Yes No	Amount Water Remo	ved: 2.25		Gallons	7
	Ameant Water Itemo	4		<u> </u>	

New Ulm, MN 56073

1975 1985 1985	Groundw	ater Asse	ssment			Site:	Otterta	il Power	Co./Hoot Lake
	Sampling Pe	ersonnel:				Facility ID:	SW-21	1	
		Dusty 5	7 19(4541)			Date: 7	June 17		
		<i>Dwy</i>	7			Unique Static		47	
				-		Sample ID:	S-14R		
	Well Cond								A.I.
	Well Labele		Mes No Wes No	_		Protective Po			No No
	Casing Stra		(Yes No	_		Grout Seal In			No
	Repairs Nec			-					
	Well Infor								
	Well Depth:	97	. 11	· · ·		Well Casing	Elevation:	NA	
	Constructed	Depth:				Static Water	Elevation:		
	Casing Diar	neter:	2"			Previous Stat	tic:	1	
	Water Leve	Before Pur	ge: 79.2	3		Water Level	After Sample:	79.5	23
	Well Volume	e:),	29	Gallons	_	Measuremen	t Method:	€lec. V	VŁI Steel Tape
	Sampling	Informatio	n						
	Weather Co	nditions:	Temp: 7	0	Wind: \mathcal{L}_{ς}	-V	Sky:	PHys	Clary
(state	Sampling M	ethod:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other:	•	
	Dedicated E	quipment:	Yes No	_		Pumping Rat	e: 0,25	5	gpm
	Well Purged	d Dry?	Yes (No	_		Time Pump E	Began: <i>月ススC</i>	<u>ን</u>	am / ∰
	Time Purge	d Dry?				Time of Sam	pling: 123°	₹	am / 🏟
	Duplicate S	ample?	Yes No	ID:		Sample EH:	-123,5		
							الاستها		~ °C
	Sample App	pearance:	General:	Clear	Color: No	<u> Phase</u>	: Lt. Sedi		Odor: Sulfyrous
		pearance:						SEQ	Odor: Julylous
	Sample App	pearance:	General: Gen	Temp °C	Color: No. D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Odor: ว _ช Hนูเอนร์ Comments:
	<u> </u>		Specific	Temp	D. O.	Turbidity	Gallons		
	Time 122¢	рН 7.05	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	#	
	Time 122¢	рН	Specific Cond.	Temp OC 16.23	D. O. mg/L	Turbidity NTU	Gallons Removed	# 1	
	© Time 122¢	pH 7.05 7.05	Specific Cond.	Temp °C 6.28	D. O. mg/L 1.52	Turbidity NTU 27.5	Gallons Removed	1 2	
	Time 122¢	pH 7.05 7.05	Specific Cond.	Temp °C 6.28	D. O. mg/L 1.52	Turbidity NTU 27.5	Gallons Removed	# 1 2 3	

Comments:



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FINAL REPORT COMPLETION DATE:

Date Reported: 16 Aug 2017

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0335 Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Field Service Manager/Date Reviewed 16 Duy 201 Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Report Date: 16 Aug 2017 Lab Number: 17-A32939 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 14:57 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Date Analyz		Analyst		
MS Water Digestions					17 Jul	17		JMS
Water Digestions					17 Jul	17		JMS
Radium 226	See Attac	hed			15 Aug	17	15:02	ABL
Radium 228	See Attac			EPA M9320			15:03	ABL
pH, Field	6.86	units	1.00	I-1586-85	10 Jul	17	14:57	DGF
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	12 Jul	17	12:30	AJM
Sulfate	154 @	mq/L	5.0	ASTM D516-07	18 Jul	17	9:17	MRW
Chloride	< 3	mg/L	3	SM 4500 C1 E	14 Jul	17	8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul	17	16:02	RMB
Solids, Total Dissolved	645	mg/L	10	SM 2540 C-97	13 Jul	17	9:14	AJM
Calcium	140.0	mg/L	0.500	SW6010C	19 Jul	17	14:40	KAM
Lithium	0.034	mg/L	0.005	SW6010C	20 Jul	17	14:32	KAM
Barium	0.043	mg/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul	17	14:40	KAM
Cobalt	< 0.005	mq/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Boron	0.236	mg/L	0.100	SW6010C	19 Jul	17	14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug	17	14:10	RMV
Arsenic	< 1	ug/L	0.5	SW6020A			14:10	RMV
1,41,414,1	@See Narr							
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Aug	17	14:10	RMV
PAR AND PRO	@See Narr							
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 Auc	17	14:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	2 Auc	17	14:10	RMV
Molybdenum	1.38	ug/L	0.50	SW6020A	2 Auc	17	14:10	RMV
	@See Narr							
Selenium	< 1	ug/L	0.5	SW6020A	2 Aug	17	14:10	RMV
Alexander with	@See Narr							
Thallium	< 0.2 @	uq/L	0.1	SW6020A	2 Aug	17	14:10	RMV
Fluoride	< 0.2 #	mq/L	0.02	EPA 300.0			10:50	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Page: 3 of 12

Report Date: 16 Aug 2017 Lab Number: 17-A32940 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 10 Jul 2017 15:46
Sampled By: MVTL FIELD PERSONNEL
Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Method Reference	Date Analy		Analyst	
MS Water Digestions					17 Ju	1 17		JMS
Water Digestions					17 Ju	1 17		JMS
Radium 226	See Attac	hed			15 Au	9 17	15:03	ABL
Radium 228	See Attac	hed		EPA M9320			15:03	ABL
pH, Field	7.02	units	1.00	I-1586-85	10 Ju	1 17	15:46	DGF
Hq	* 7.1	units	1.0	SM 4500 H+ B-2000	12 Ju	1 17	12:30	AJM
Sulfate	108 @	mq/L	5.0	ASTM D516-07	18 Ju	1 17	9:17	MRW
Chloride	12.5	mq/L	3.0	SM 4500 C1 E	14 Ju	1 17	8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Ju	1 17	16:02	RMB
Solids, Total Dissolved	544	mg/L	10	SM 2540 C-97	13 Ju	1 17	9:35	AJM
Calcium	105.0	mq/L	0.500	SW6010C	19 Ju	1 17	14:40	KAM
Lithium	0.023	mq/L	0.005	SW6010C	20 Ju	1 17	14:32	KAM
Barium	0.039	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Ju	1 17	14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Boron	0.177	mq/L	0.100	SW6010C	19 Ju	1 17	14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Au	g 17	14:10	RMV
Arsenic	< 1	ug/L	0.5	SW6020A	2 Au	g 17	14:10	RMV
	@See Narr	ative						
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Au	g 17	14:10	RMV
100	@ See Nar	rative						
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 Au	g 17	14:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A			14:10	RMV
Molybdenum	1.77	ug/L	0.50	SW6020A			14:10	RMV
	@See Narr	ative						
Selenium	2.84	ug/L	0.50	SW6020A	2 Au	g 17	14:10	RMV
A STATE OF THE STA	@See Narr							
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Au	g 17	14:10	RMV
Fluoride	< 0.2 #	mq/L	0.02	EPA 300.0			10:50	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

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:

8 = Due to sample matrix
1 = Due to sample quantity
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Report Date: 16 Aug 2017 Lab Number: 17-A32941 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 17:46 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Date Analyz	Analyst			
MS Water Digestions		_			17 Jul	17		JMS
Water Digestions						17		JMS
Radium 226	See Attac	hed			15 Aug	17	15:03	ABL
Radium 228	See Attac			EPA M9320	15 Aug			ABL
pH, Field	6.93	units	1.00	1-1586-85	10 Jul	17	17:46	DGF
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	12 Jul	17	12:30	AJM
Sulfate	53.2 @	mg/L	5.0	ASTM D516-07	18 Jul	17	9:17	MRW
Chloride	16.2	mg/L	3.0	SM 4500 Cl E	14 Jul	17	8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul	17	16:02	RMB
Solids, Total Dissolved	479	mg/L	10	SM 2540 C-97	13 Jul	17	9:35	AJM
Calcium	108.0	mg/L	0.500	SW6010C	19 Jul	17	14:40	KAM
Lithium	0.022	mg/L	0.005	SW6010C	20 Jul	17	14:32	KAM
Barium	0.061	mg/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul	17	14:40	KAM
Cobalt	< 0.005	mq/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	19 Jul	17	14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug	1 17	14:10	RMV
Arsenic	< 1	ug/L	0.5	SW6020A			14:10	RMV
ALGORILO	@See Narr			Agus Caracas.	, and			
Beryllium	< 0.1	uq/L	0.05	SW6020A	2 Aug	1 17	14:10	RMV
DOL J. L. L. L.	@See Narr		101100					
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug	1 17	14:10	RMV
Lead	< 1 0	ug/L	0.5	SW6020A			14:10	RMV
Molybdenum	1.72	uq/L	0.50	SW6020A			14:10	RMV
tio 2 you contain	@See Narr							
Selenium	< 1	ug/L	0.5	SW6020A	2 Aug	1 17	14:10	RMV
MACHINETTO MINI	@See Narr		452	10 CA 17 TO 18 CO		130		
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug	1 17	14:10	RMV
Fluoride	0.450 #	mq/L	0.020	EPA 300.0			10:50	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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:

8 = Due to sample matrix
! = Due to sample quantity
| = Due to sample quantity | + = Due to internal standard response
| = Due to internal standard response | + = Due to internal standar



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 16 Aug 2017 Lab Number: 17-A32942 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 18:08 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Method Reference	Date Analy	Analyst		
MS Water Digestions					17 J	1 17	7	JMS
Water Digestions					17 Ju	1 17	1	JMS
Radium 226	See Attac	hed			15 At	g 17	15:03	ABL
Radium 228	See Attac	hed		EPA M9320			15:03	ABL
pH, Field	6.74	units	1.00	I-1586-85	10 Ju	1 17	18:08	JLH
рН	* 7.0	units	1.0	SM 4500 H+ B-2000	12 Ju	1 17	12:30	AJM
Sulfate	54.0 @	mg/L	5.0	ASTM D516-07	18 Ju	1 17	9:17	MRW
Chloride	15.6	mq/L	3.0	SM 4500 C1 E	14 J	1 17	9:06	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Ju	1 17	16:02	RMB
Solids, Total Dissolved	459	mg/L	1.0	SM 2540 C-97	13 Jt	1 17	9:35	AJM
Calcium	97.40	mg/L	0.500	SW6010C	19 Ju	1 17	14:40	KAM
Lithium	0.021	mq/L	0.005	SW6010C	20 Ju	1 17	14:32	KAM
Barium	0.109	mg/L	0.005	SW6010C	19 Ju	1 1	14:40	KAM
Chromium	< 0.01	mq/L	0.01	SW6010C	19 Jt	1 17	14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	19 Ju	1 17	14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 At	q 17	14:10	RMV
Arsenic	1.91	ug/L	0.50	SW6020A			14:10	RMV
	@See Narr	ative				3 10		
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Ai	g 17	14:10	RMV
A CONTRACTOR OF THE CONTRACTOR	@See Narr	ative						
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 A	q 1	7 14:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	2 A	g 1	7 14:10	RMV
Molybdenum	2.07	ug/L	0.50	SW6020A	2 A	q 1	7 14:10	RMV
	@See Narr	ative						
Selenium	< 1	ug/L	0.5	SW6020A	2 At	g 1	7 14:10	RMV
	@See Narr			7.0		3		
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 A1	g 17	14:10	RMV
Fluoride	< 0.2 #	mg/L	0.02	EPA 300.0	13 Ji	1 17	10:50	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

* 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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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

56538-0496 FERGUS FALLS MN

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

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Report Date: 16 Aug 2017 Lab Number: 17-A32943 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 17:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Method Reference	Date Analy2		Analyst	
MS Water Digestions					17 Jul	17		JMS
Water Digestions					17 Jul	17		JMS
Radium 226	See Attac	hed			15 Aug	17	15:04	ABL
Radium 228	See Attac			EPA M9320			15:05	ABL
pH, Field	6.69	units	1.00	I-1586-85	10 Jul	17	17:18	JLH
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	12 Jul	17	12:30	AJM
Sulfate	98.1 @	mq/L	5.0	ASTM D516-07	18 Jul	17	9:17	MRW
Chloride	11.7	mq/L	3.0	SM 4500 C1 E	14 Jul	17	9:06	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7			12:01	RMB
mercury	See Narra		7.77		27,500	160		
Solids, Total Dissolved	529	mq/L	10	SM 2540 C-97	13 Jul	17	9:35	AJM
Calcium	109.0	mg/L	0.500	SW6010C	19 Jul	17	14:40	KAM
Lithium	0.022	mg/L	0.005	SW6010C	20 Jul	17	14:32	KAM
Barium	0.099	mq/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Chromium	< 0.01	mq/L	0.01	SW6010C	19 Jul	17	14:40	KAM
Cobalt	< 0.005	mq/L	0.005	SW6010C	19 Jul	17	14:40	KAM
Boron	< 0.1	mg/L	0.1	SW6010C			14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug	17	14:10	RMV
Arsenic	7.95	ug/L	0.50	SW6020A	2 Aug	17	14:10	RMV
100000000000000000000000000000000000000	@See Narr							
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Aug	17	14:10	RMV
	@See Nari	ative						
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug	17	14:10	RMV
Lead	< 1 0	ug/L	0.5	SW6020A	2 Aug	17	14:10	RMV
Molybdenum	2.31	ug/L	0.50	SW6020A	2 Aug	17	14:10	RMV
100040700000	@See Narr							
Selenium	< 1	ug/L	0.5	SW6020A	2 Aug	17	14:10	RMV
	@See Nari				100	191		
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug	17	14:10	RMV
Fluoride	0.220 #	mq/L	0.020	EPA 300.0	13 Ju	17	10:50	RC

RL = Reporting Limit



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Report Date: 16 Aug 2017 Lab Number: 17-A32943 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 17:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

As Received Result

Method RL

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

* 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 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

56538-0496 FERGUS FALLS MN

Project Name: HOOT LAKE PLANT

Sample Description: S-13

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Report Date: 16 Aug 2017 Lab Number: 17-A32944 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 16:13 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Method Reference	Date Analy		Analyst	
MS Water Digestions					17 Ju	17	_	JMS
Water Digestions					17 Ju	17		JMS
Radium 226	See Attac	hed			15 Au	1 17	15:05	ABL
Radium 228	See Attac			EPA M9320	15 Au	1 17	15:05	ABL
pH, Field	6.99	units	1.00	I-1586-85			16:13	DGF
pH FIELD	* 7.2	units	1.0	SM 4500 H+ B-2000	12 Ju	17	12:40	AJM
Sulfate	73.4 0	mg/L	5.0	ASTM D516-07	18 Ju	17	9:17	MRW
Chloride	8.9	mg/L	3.0	SM 4500 C1 E	14 Ju	17	9:06	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	26 Ju	17	12:01	RMB
Mercury	See Narra		0.000					
Solids, Total Dissolved	477	mq/L	10	SM 2540 C-97	13 Ju.	1 17	9:35	AJM
Calcium	111.0	mq/L	0.500	SW6010C	19 Ju	1 17	14:40	KAM
Lithium	0.025	mg/L	0.005	SW6010C	20 Ju	1 17	14:32	KAM
Barium	0.061	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Ju	1 17	14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	19 Ju	1 17	14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Au	1 17	14:10	RMV
Arsenic	< 1	ug/L	0.5	SW6020A	2 Au	1 17	14:10	RMV
	@See Narr							
Beryllium	< 0.1	uq/L	0.05	SW6020A	2 Au	3 17	14:10	RMV
	@See Narr	cative						
Cadmium	< 0.2 @	uq/L	0.1	SW6020A			14:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	2 Au	17	14:10	RMV
Molybdenum	1.20	uq/L	0.50	SW6020A	2 Au	17	14:10	RMV
(1) 1 (1) (1) (1) (1) (1) (1) (1) (1) (1	@See Nari							
Selenium	< 1	ug/L	0.5	SW6020A	2 Au	g 17	14:10	RMV
	@See Narr							
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Au	g 17	14:10	RMV
Fluoride	0.330 #	mg/L	0.020	EPA 300.0			10:50	RC
11401140	2.000 0		2,445,	(ace) 2.090g				44.0

BL = Reporting Limit RL = Reporting Limit

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

0 = Due to sample matrix # = Due to concentration of other analytes

1 = Due to sample quantity # = Due to internal standard response

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



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RL



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Report Date: 16 Aug 2017 Lab Number: 17-A32944 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 16:13 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

Method As Received

Method Reference

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.

Result

- Reporting Limit RI = 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:

8 = Due to sample matrix
9 = Due to sample matrix
1 = Due to concentration of other analytes
1 = Due to sample quantity

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



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 16 Aug 2017 Lab Number: 17-A32945 Work Order #: 31-0335

Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 10 Jul 2017 17:01 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

	As Receiv Result	red	Method RL	Method Reference	Date Analy		Analyst	
MS Water Digestions					17 Ju	1 17		JMS
Water Digestions					17 Ju	1 17		JMS
Radium 226	See Attac	hed			15 Au	a 17	15:05	ABL
Radium 228	See Attac			EPA M9320			15:06	ABL
pH, Field	6.70	units	1.00	I-1586-85			17:01	DGF
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	12 Ju	1 17	12:40	AJM
Sulfate	96.8 @	mg/L	5.0	ASTM D516-07		1 17		MRW
Chloride	5.5	mg/L	3.0	SM 4500 Cl E		1 17		MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7			12:01	RMB
Mercury	See Narra		0.000			7/7/		
Solids, Total Dissolved	568	mg/L	10	SM 2540 C-97	13 Ju	1 17	9:35	MLA
Calcium	117.0	mg/L	0.500	SW6010C	19 Ju	1 17	14:40	KAM
Lithium	0.031	mg/L	0.005	SW6010C	20 Ju	1 17	14:32	KAM
Barium	0.070	mg/L	0.005	SW6010C			14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C			14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Ju	1 17	14:40	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	19 Ju	1 17	14:40	KAM
Antimony	< 2 6^	ug/L	0.5	SW6020A	2 Au	a 17	14:10	RMV
Arsenic	3.37	ug/L	0.50	SW6020A	2 Au	g 17	14:10	RMV
nibunit	@See Narr		5.000	20121011	100			
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Au	q 17	14:10	RMV
	@See Narr		23.3.2	1000				
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	2 Au	q 17	14:10	RMV
Lead	< 1 0	ug/L	0.5	SW6020A			14:10	RMV
Molybdenum	2.34	ug/L	0.50	SW6020A	2 Au	g 17	14:10	RMV
1,202 Tr. 2011 2111	@See Narr		12.5.20	17.77.711117.7				
Selenium	< 1	uq/L	0.5	SW6020A	2 Au	q 17	14:10	RMV
222200	@See Narr		7.7	TO THE STATE OF TH				
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Au	g 17	14:10	RMV
Fluoride	0.320 #	mq/L	0.020	EPA 300.0			10:50	RC

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:



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



CERTIFICATE of ANALYSIS - CCR

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

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

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Report Date: 16 Aug 2017 Lab Number: 17-A32945 Work Order #: 31-0335 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 10 Jul 2017 17:01
Sampled By: MVTL FIELD PERSONNEL

Date Received: 11 Jul 2017 13:00

PO #: 48679

Temp at Receipt: 0.5C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ 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.



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



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Date Reported: 16 Aug 2017

Work Order #: 201731-0335 Account Number: 006106

PO #: 48679

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

Project Name: HOOT LAKE PLANT

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES: The mercury recovery was elevated in the matrix spike duplicate associated with samples 17-A32943 through 17-A32945. Data that was below the reporting limit was reported.

For samples 17-A32939 through 17-A32945, the beryllium recovery was elevated outside of acceptance range in the knowns. Data that was below the reporting limit was reported.

The internal standards associated with beryllium, arsenic, selenium, and molybdenum were outside of acceptance range in the blank spike. Beryllium was outside of acceptance range in the matrix spike and matrix spike duplicate in samples 17-A32939 through 17-A32945. Data was reported based on the acceptable recovery of beryllium, arsenic, selenium, and molybdenum in the blank spike, matrix spike, and matrix spike duplicate.

No other problems were encountered with these analyses.



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

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Quality Control Report

Lab IDs: 17-A32939 to 17	Pro	Project: HOOT LAKE PLANT				Work Order: 201731-0335											
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	98	85-115	25.0	a32948qc	< 2	25.3	101	75-125	25.3	25.3	101	0.0	10	102	90-110	< 0.5
Arsenic ug/L	25.0	100	85-115	25.0	a32948qc	12.3	38.3	104	75-125	38.3	38.6	105	0.8	10	102	90-110	< 0.5
Barium mg/L	1.000	100	85-115	1.00	17A32945q	0.070	1.080	101	75-125	1.080	1.090	102	0.9	10	98	90-110	< 0.005
Beryllium ug/L	2.50	109	85-115	2.50	a32948qc	< 0.1	2.31	92	75-125	2.31	2.37	95	2.6	10	117	90-110	< 0.05
Boron mg/L	1.000	96	85-115	1.00	17A32945q	< 0.1	1.040	104	75-125	1.040	1.050	105	1.0	10	95	90-110	< 0.1
Cadmium ug/L	5.00	103	85-115	5.00	a32948qc	< 0.2	5.18	104	75-125	5.18	5.22	104	0.8	10	103	90-110	< 0.1
Calcium mg/L	50.00	98	85-115	50.0	17A32945q	117.0	170.0	106	75-125	170.0	169.0	104	0.6	10	96	90-110	< 0.5
Chloride mg/L	-	-	-	60.0 60.0	17-A32939 17-A33020	<3 169	61.3 226	102 95	85-121 85-121	61.3 226	61.6 222	103 88	0.5 1.8	5 5	95 94	90-110 90-110	< 3 < 3
Chromium mg/L	1.000	101	85-115	1.00	17A32945q	< 0.01	1.020	102	75-125	1.020	1.010	101	1.0	10	100	90-110	< 0.01
Cobalt mg/L	1.000	102	85-115	1.00	17A32945q	< 0.005	0.959	96	75-125	0.959	0.962	96	0.3	10	100	90-110	< 0.005
Fluoride mg/L	-	-	-	2.00	17-A32945	0.320	2.13	91	75-125	2.13	2.21	94	3.7	10	97	90-110	< 0.02
Lead ug/L	25.0	103	85-115	25.0	a32948qc	< 1	26.0	104	75-125	26.0	26.0	104	0.0	10	103	90-110	< 0.5
Lithium mg/L	1.000	105	85-115	1.00	17-A32944	0.025	1.140	112	75-125	1.140	1.140	112	0.0	10	106 107	90-110	< 0.005
Mercury ug/L	- - - -	- - - -	- - - -	0.10 0.10	17-A32942 17-A34058	< 0.005 0.007	0.099 0.115	99 108	63-111 63-111	0.099 0.115	0.099 0.119	99 112	0.0	18 18	99 102	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0	99	85-115	25.0	a32948qc	2.37	27.4	100	75-125	27.4	27.6	101	0.7	10	106	90-110	< 0.5



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Quality Control Report

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Rec	Known % Rec Limits	Method Blank
pH units	-	-	-	-	-	-	-	-	-	7.1 7.0	7.1 7.0	-	0.0	2.5 2.5	101 101	90-110 90-110	-
Selenium ug/L	25.0	99	85-115	25.0	a32948qc	< 1	25.9	104	75-125	25.9	25.8	103	0.4	10	102	90-110	< 0.5
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	645 544	649 550	-	0.6 1.1	8 8	88 94	85-115 85-115	< 10
Sulfate mg/L	-	-	-	500	17-A32946	305	917	122	74-128	917	909	121	0.9	5	102	80-120	< 5
Thallium ug/L	5.00	103	85-115	5.00	a32948qc	< 0.2	5.38	108	75-125	5.38	5.34	107	0.7	10	103	90-110	< 0.1 < 0.1

The Beryllium know recovery was outside the acceptance limits, see narrative.

The mercury matrix spike duplicate recovery was outside the acceptance limits, see narrative.





Date: 8/15/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Hoot Lake

Report ID: S1707201001

Lab Order: S1707201

Samples S10R-A32943, S13-A32944, S14R-A32945, S2A-A32939, S51-A32941, S52-A32942, and SA3R-A32940 were received on July 14, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: *All*



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

ClientSample ID: S2A-A32939

S1707201-001

WO#31-0335

8/15/2017 Date Reported S1707201001 Report ID

WorkOrder: S1707201

CollectionDate: 7/10/2017 2:57:00 PM 7/14/2017 11:21:00 AM DateReceived:

FieldSampler:

Water Matrix:

COC:

Comments									
Analyses	Result	Result Units		RL	Method	Date Analyzed/Init			
Radionuclides - Total									
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/10/2017 2237	MB		
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/10/2017 2237	MB		
Radium 228	ND	pCi/L		2	Ga-Tech	08/08/2017 807	MB		
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/08/2017 807	MB		

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Ε Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

Ottertail Power Hoot Lake ProjectName:

Lab ID: S1707201-002 ClientSample ID: SA3R-A32940

WO#31-0335 COC:

8/15/2017 Date Reported S1707201001 Report ID

S1707201 WorkOrder:

CollectionDate: 7/10/2017 3:46:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Water Matrix:

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/08/2017 1110	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/08/2017 1110	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Ε Value above quantitation range

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

Ottertail Power Hoot Lake ProjectName:

Lab ID: S1707201-003 ClientSample ID: S51-A32941

COC: WO#31-0335

8/15/2017 Date Reported S1707201001 Report ID

S1707201 WorkOrder:

CollectionDate: 7/10/2017 5:46:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Water Matrix:

Comments						Data Amalomad/I	:4
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/08/2017 1413	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/08/2017 1413	МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect

Reviewed by: 4

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 7



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

Ottertail Power Hoot Lake ProjectName:

Lab ID: S1707201-004 ClientSample ID: S52-A32942

WO#31-0335 COC:

Date Reported 8/15/2017 S1707201001 Report ID

S1707201 WorkOrder:

CollectionDate: 7/10/2017 6:08:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Water Matrix:

Commonte

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB
Radium 228	ND	pCi/L		2	Ga- T ech	08/08/2017 1716	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/08/2017 1716	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Ε

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID:

S1707201-005 ClientSample ID: S10R-A32943

COC:

WO#31-0335

Date Reported Report ID

8/15/2017

\$1707201001

WorkOrder:

S1707201

CollectionDate: 7/10/2017 5:18:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix:

Water

Cammanta

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	МВ
Radium 228	ND	pCi/L		2	Ga-Tech	08/08/2017 2019	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/08/2017 2019	MB

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range Е

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory L ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: 4

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Hoot Lake

Lab ID: ClientSample ID: S13-A32944

S1707201-006

WO#31-0335

8/15/2017 Date Reported S1707201001 Report ID

WorkOrder:

S1707201

CollectionDate: 7/10/2017 4:13:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix: Water

COC:

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/11/2017 1359	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/11/2017 1359	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range Е

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory L Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company: MVTL Inc

> 1126 N Front St New Ulm, MN 56073

Ottertail Power Hoot Lake ProjectName:

S1707201-007 Lab ID: ClientSample ID: S14R-A32945

WO#31-0335 COC:

Date Reported 8/15/2017 \$1707201001 Report ID

WorkOrder: S1707201

CollectionDate: 7/10/2017 5:01:00 PM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix: Water

Camananta

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/11/2017 1702	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/11/2017 1702	MB

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range Ε

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 8/15/2017

Work Order: S1707201

Report ID: S1707201001

Project: Ottertail Power Hoot Lake

Radium 228 by Ga/Tech	Sample Type MBLK	Units	pCi/L			
MB-451 (08/05/17 22:08)	RunNo: 148896	PrepDate: 07/1			hID 13519	
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1				
MB-452 (08/10/17 22:43)	RunNo: 148962	PrepDate: 07/1	9/17 12:00	Bato	hID 13543	
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1				
Radium 228 by Ga/Tech	Sample Type LCS	Units	: pCi/L			
LCS-451 (08/06/17 01:11)	RunNo: 148896	PrepDate: 07/1			hID 13519	
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	43	1 39.5		108		
LCS-452 (08/11/17 01:46)	RunNo: 148962	PrepDate: 07/1	9/17 12:00	Bato	hID 13543	
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	33	1 39.5		83.8	65.9 - 132	
Radium 228 by Ga/Tech	Sample Type MS	Units	: pCi/L			
MS-451 (08/06/17 07:18)	RunNo: 148896	PrepDate: 07/1	7/17 14:00	Bato		
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	49	1 39.5	ND	123	50 - 139	
MS-452 (08/11/17 07:52)	RunNo: 148962	PrepDate: 07/1	9/17 12:00	Bato	:hID 13543	
Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	44	1 39.5	ND	111	50 - 139	
Radium 228 by Ga/Tech	Sample Type MSD	Units	: pCi/L			
MSD-452 (08/11/17 10:55)	RunNo: 148962	PrepDate: 07/1	9/17 12:00	Bato	hID 13543	
Analyte	Result	RL Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	42	1 44	4.14	106	20	

Qualifiers:

B Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 8/15/2017

Work Order: S1707201

Report ID: S1707201001

Project: Ottertail Power Hoot Lake

Radium 226 in Water -	Sample Type MBLK	Units: pCi/L
MB-1778 (08/11/17 11:29)	RunNo: 148977	PrepDate: 07/31/17 0:00 BatchID 13532
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	ND	0.2
MB-1777 (08/10/17 15:49)	RunNo: 148982	PrepDate: 07/31/17 0:00 BatchID 13530
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	ND	0.2
Radium 226 in Water -	Sample Type LCS	Units: pCi/L
LCS-1778 (08/11/17 11:29)	RunNo: 148977	PrepDate: 07/31/17 0:00 BatchID 13532
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	5.8	0.2 6.41 90.6 67.1 - 122
LCS-1777 (08/10/17 15:49)	RunNo: 148982	PrepDate: 07/31/17 0:00 BatchID 13530
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	5.9	0.2 6.41 92.5 67.1 - 122
Radium 226 in Water -	Sample Type MS	Units: pCi/L
MS-1778 (08/11/17 11:29)	RunNo: 148977	PrepDate: 07/31/17 0:00 BatchID 13532
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	5.8	0.2 6.41 ND 89.5 65 - 131
MS-1777 (08/10/17 15:49)	RunNo: 148982	PrepDate: 07/31/17 0:00 BatchID 13530
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	5.6	0.2 6.41 ND 86.4 65 - 131
Radium 226 in Water -	Sample Type MSD	Units: pCi/L
MSD-1778 (08/11/17 11:29)	RunNo: 148977	PrepDate: 07/31/17 0:00 BatchID 13532
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qual
Radium 226	6.2	0.2 5.8 7.76 96.7 20
MSD-1777 (08/10/17 15:49)	RunNo: 148982	PrepDate: 07/31/17 0:00 BatchID 13530
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qual
Radium 226	5,8	0.2 5.6 5.14 91.0 20

Qualifiers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -	Page	of
All shaded fields must be completed.	#WEB	
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IN.	TER-MOUNTAIN LABS				This is a legal docume	nt; any misrepr	esentation m	av be c	onstrue	d as fra	ud.					#VVEB		
Clie	nt Name	*****		Project Id	entification		Sampler (S					nenticity	')			Telephone #		
M٧				Ottertail	Power Hoot Lake												5.00	JÖA ÍVA
Rep	ort Address			Contact N	lame				ANA	LYSI	ES / I	PARA	MET	ERS				
	26 North Front St			Tim Po														
S. C. C. L. C.	w Ulm, Mn 56073	18		Email	tportner@mvtl.com			228										
	ice Address Me			Phone	507-276-8089			+ 9										
Ja	ile .				Purchase Order#	Quote#		n 226								DEM	ARKS	
ITEM	LAB ID (Lab Use Only)	DATE SAMI	TIME PLED		SAMPLE IDENTIFICATION	Matrix	# of Containers	Radium			100 100 100					NCIVI.	AKNO	
i	5H072N-001	19 July 17	1457	S2A	- A 32939	WT	2	х							110,170,000			
2	-02	1	1546	S3AR	- A32940	WT	2	x										
3	-03		1746	S51	- A32941	WT	2	x										
4	-004		1808	S52	- 1432942	WT	2	х										
5	-005		1718	S10R	- A32943	WT	2	х										
6	والم		1613	S13	- A32944	WT	2	×										
7	-00H	ー	1701	S14R	- A32945	WT	2	×							_			
8				MVT														
9	2007 2007 2007 2007 2007 2007 2007 2007																	
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14	approximate and a second secon																·	
	LAB COMMENTS	a de la companya de	Relin	quished By	(Signature/Printed)	DATE	TIME		R	ceived	By (Si	gnature	Printed)		DATE	TIME	
	23,5°C	山工	I Kar	$_{l}Z\Omega$	ety 1909sm	104417			Zn.	200	1	Ola	<u> </u>	Ka	1/	HMA	11:21	
	020 - 1		100	•		1					-	Ì				! (
	\mathcal{T}'		The second															
	SHIPPING INFO UPS	MATRIX Water	CODES WT	Check	TURN AROUND TIMES lesired service	CHEMICA PRINCESSES PROFESSION CONTINUES	MPLIANC	E manifest de la company	POR USA PROMOTORS	Y VOID:	0.0000000000000000000000000000000000000			AD	DITIO	NAL REMARK	\$	
	FedEx	Soil	SL	135-35-11-11-21-21-21-21-21-21-21-21-21-21-21-	andard turnaround		(SDWA, 1				• •							
	USPS	Solid	SD		JSH - 5 Working Days	PWSID /	Permit #											
	Hand Carried Other	Filter Other	FT OT		RGENT - < 2 Working Days & Urgent Surcharges will be applied	Chlorina		امد	4.95000000	Y)	/ N							
	Outer	Outer	O I	1,031	a organicourcharges will be applied	ample.	Disposal:	Lan		Client								- 1

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 ax Date /1/20 17
pages 1-8

Project Nai	me:	Otter Tail Po Hoot Lake Pl		Project	Type:	Hoot Lake Plant			Name of Samplers: DF, JH													
Report To: Attn: Address: Phone:	dress: P.O. Box 496 Fergus Falls, MN 56038-0496			Carbon Attn: Address									Quote Number: Work Order Number: 31–0335 Lab Numbers:									
		Sample Inform	nation							E	3ott	le T	ур	е					Analysis	7		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 Por	1000 HNGS	500 HNO3	"Iller? Y	500 HNO3	"Iller? Y or .	500H2SO4	1000 Amt	500 NaO.	Other: 150	Other 150	Analysis Required		/		
A32989			10 July 17	1457	GW		1	2	1	n	4,7		7,		-			see attach	ment	1		
	S3AR			10/5 7 4 5	GW		1	2	1	n			П			11		TELL				
	S51			1746	GW		1	2	1	n			h									
42	S52	10		1803	GW		1	2	1	n	9 1											
43	S10R			1718	GW		1	2	1	n			Ì									
44	S13	18		1613	GW		1	2	1	n												
45	S14R		سلم	1701	GW		1	2	1	n						13						
													Щ									
Comments:	CCR well	s		1		1	-															

Work Order #2

Samples Relinqui	shed By:	Kn		Samples Receiv	ed By: (1- A) le d	(w)
Date: Il Jai	417	Time: 1300	Temp: 0.5	Date: //Ju	117 Time: 1300	Temp: 0.5C
Samples Relinqui		Fridge Lo	og in Cart Other:			
Samples Relinqui	shed By:			Samples Receiv	ed By:	
Date:		Time:	Temp:	Date:	Time:	Temp:
Deliver	Samplers	Other:		Seal Number(s)	- If Used	
Transpu	Ambient	TOE	Other:	Seals Intact?	Yes No	

New Ulm, MN 56073

Groundwater Assessment		Site:	Otter Tail Po	r Tail Power Co./ Hoot Lake	
Sampling Personnel:		Facility ID:	SW-211		
Dusty Facasyn		Date: 10 Jul	リフ		
		Unique Station ID	:	***	
		Sample ID:	S-2A		
Well Condition Well Locked? Yes No Well Labeled? Yes No Casing Straight? Yes No Repairs Necessary: Yes No	生物。	Protective Posts? State ID Tag? Grout Seal Intact?	Yes Yes	No (No No	
Well Information					
Well Depth: 79.61		Well Casing Elev	ation:	1273.776	
Constructed Depth: 79.63		Static Water Elev	ation: 1197	. 234	
Casing Diameter: 2"		Previous Static:	1197.17	6	
Water Level Before Purge: 76.54		Water Level After	Sample: 🔓	low Perms	
Well Volume: 0.50 Gallons		Measurement Me	The same of the sa	9 ~ ·	
Sampling Information					
Weather Conditions: Temp: 80	Wind: <u></u>) F 7	Sky: Sun	ny	
Sampling Method: Grundfos Bradder SSP	Disp. Bailer	Whale Grab		/	
			-		
Dedicated Equipment: (Fe) No		Pumping Rate:	0.25	gpm	
Dedicated Equipment: (Fest No Well Purged Dry? Yes (No)		Pumping Rate: Time Pump Bega	n: <i>145)</i>	gpm am / (p/h)	
		**************************************	n: 1451 : 1457		
Well Purged Dry? Yes No		Time Pump Bega Time of Sampling Sample EH:	n: <i>1451</i> : <i>1457</i> -180	am / (p/h)	
Well Purged Dry? Time Purged Dry?	Color: Nor	Time Pump Bega Time of Sampling Sample EH:	n: 1451 : 1457	am / (p/h)	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID:	Color: No. D. O. mg/L	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gall	n: 1451 : 1457 -180 Nave	am / (pm)	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Temp Cond. Time pH Cond. 1453 6.86 1044 11.31	D. O.	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gall NTU Ren	n: 1451 : 1457 -18.0 Nave ons SEQ	am / (p/h) am / (p/h) Odor: Mave	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Temp Cond. Time pH Cond. 1453 6.86 1044 11.31	D. O. mg/L	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity Gall NTU Ren	n: 1457 : 1457 - 18.0 Nave ons SEQ noved #	am / (p/h) am / (p/h) Odor: Mave	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Cleas Time pH Specific Cond. Temp Cond. 1453 6.86 1044 11.31 1455 6.85 1045 11.22	D. O. mg/L	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity NTU Ren 6.2 6.5	n: 1457 : 1457 - 18.0 Nave ons SEQ noved #	am / (p/h) am / (p/h) Odor: Mave	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Cleas Specific Cond. Temp Cond. Temp Cond. 1453 6.86 1044 11.31 1455 6.85 1045 11.22	D. O. mg/L 12.10	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity NTU Ren 6.2 6.5	n: 1457 -18.0 Nove ons SEQ noved #	am / (p/h) am / (p/h) Odor: Mave	
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Cleas Time pH Specific Cond. Temp Cond. 1453 6.86 1044 11.31 1455 6.85 1045 11.22	D. O. mg/L 12.10	Time Pump Bega Time of Sampling Sample EH: Phase: Turbidity NTU Ren 6.2 6.5	n: 1457 : 1457 -18.0 Nove ons SEQ noved # 0.5 1 1 2 .5 3	am / (p/h) am / (p/h) Odor: Mave	

Comments:

Groundwater Assessment	Site: Otter Tail Power Co./ Hoot Lake
Sampling Personnel:	Facility ID: SW-211
Dusty Foresyn	Date: 10 July 17
	Unique Station ID: 674671
	Sample ID: S-3A-R
Well Condition	
Well Locked? (es No	Protective Posts? (Yes No
Well Labeled? (reg No	State ID Tag? (S) No
Casing Straight? 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: 1203.642
Casing Diameter: 2"	Previous Static: 1203, 402
Water Level Before Purge: 67.92	Water Level After Sample: 67.92
Well Volume: , 7 Gallons	Measurement Method: Elec. WLL Steel Tape
Sampling Information	
Weather Conditions: Temp: 80 Wind: N	£ 7 Sky: Synny
Sampling Method: Grundfos Pladder SST Disp. Bailer	Whale Grab Other:
Dedicated Equipment: (Pes) No	
Dedicated Equipment. Trest No	Pumping Rate: 0.25 gpm
Well Purged Dry? Yes No	Time Pump Began: 1525 am 1000
Well Purged Dry? Yes No	Time Pump Began: 1525 am 1000
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID:	Time Pump Began: 1525 am / m
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Clar Color: No.	Time Pump Began: 1535 am 1000 Time of Sampling: 1546 am 1 000 Sample EH: -37.0 Phase: 1 Seed Odor: Nove
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Clar Color: No.	Time Pump Began: 1535 am 1000 Time of Sampling: 1546 am 1 000 Sample EH: -37.0 Phase: 1 Seed Odor: Nove
Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Color: No. Time PH Specific Temp Cond. D. O. mg/L	Time Pump Began: 1525 am 1000 Time of Sampling: 1546 am 1 am Sample EH: -37.0 Pre Phase: 14 Sect Odor: Nove Turbidity Gallons SEQ
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clar Color: No Time pH Cond. Cond. Comg/L 1532 7.07 909 10.05 8.05	Time Pump Began: 15.35 am 1660 Time of Sampling: 15.16 am 1 660 Sample EH: -37.0 Pre Phase: 14.5ecl Odor: Nove Turbidity Gallons SEQ Removed # Comments: 13.0 1.75 1
Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Color: No Time pH Specific Cond. Temp Cond. D. O. mg/L 1532 7.07 909 10.05 8.05 1539 7.06 911 10.00 7.97	Time Pump Began: 1525 am 1000 Time of Sampling: 1516 am 1 am Sample EH: -37.0 Phase: 1 Sect. Odor: Nove Turbidity Gallons SEQ Removed # Comments: 13.0 1.75 1 11.2 3.5 2
Well Purged Dry? Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clar Color: No Time pH Cond. Cond. Comg/L 1532 7.07 909 10.05 8.05	Time Pump Began: 1525 am 1670 Time of Sampling: 1516 am 1670 Sample EH: -37.0 Phase: 1 Sect. Odor: Nove Turbidity Gallons SEQ Removed # Comments: 13.0 1.75 1 11.2 3.5 2 9.8 5.25 3
Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Color: No Time pH Specific Cond. Temp Cond. D. O. mg/L 1532 7.07 909 10.05 8.05 1539 7.06 911 10.00 7.97	Time Pump Began: 1525 am 1670 Time of Sampling: 1546 am 1670 Sample EH: -37.0 Pre Phase: 1 Sect Odor: Nove Turbidity Gallons Removed # Comments: 13.0 1.75 1 11.2 3.5 2 9.8 5.25 3
Well Purged Dry? Yes No ID: Time Purged Dry? Yes No ID: Duplicate Sample? Yes No ID: Sample Appearance: General: Color: No Time pH Specific Cond. Temp Occidented Cond. D. O. mg/L 1532 7.07 909 10.05 8.05 1539 7.06 911 10.00 7.97 1546 7.02 912 9.95 8.00	Time Pump Began: 1525 am 1670 Time of Sampling: 1516 am 1670 Sample EH: -37.0 Phase: 1 Sect. Odor: Nove Turbidity Gallons SEQ Removed # Comments: 13.0 1.75 1 11.2 3.5 2 9.8 5.25 3 4
Well Purged Dry? Yes No ID: Time Purged Dry? Yes No ID: Duplicate Sample? Yes No ID: Sample Appearance: General: Color: No Time pH Specific Cond. Temp Occidented Cond. D. O. mg/L 1532 7.07 909 10.05 8.05 1539 7.06 911 10.00 7.97 1546 7.02 912 9.95 8.00	Time Pump Began: 1525 am 1670 Time of Sampling: 1546 am 1670 Sample EH: -37.0 Pre Phase: 1 Sect Odor: Nove Turbidity Gallons Removed # Comments: 13.0 1.75 1 11.2 3.5 2 9.8 5.25 3

Groundwater Assessment	Site: Otter Tail Power Co./ Hoot Lake
Sampling Personnel:	Facility ID: SW-211
Dusty Farasyn	Date: 10 July 17
	Unique Station ID: 814830
	Sample ID: S-51
Well Condition	
Well Locked? (Yes) No	Protective Posts? Yes No
Well Labeled? (Yes No Casing Straight? (Yes No	State ID Tag? (1es) No Grout Seal Intact? (1es) No
Repairs Necessary:	Glout Geal Intact: Test 110
Well Information	
Well Depth: 55.60	Well Casing Elevation: 1286.9
Constructed Depth:	Static Water Elevation: 1237.12
Casing Diameter: 2"	Previous Static: 1237.09
Water Level Before Purge: 49.78	Water Level After Sample: 49.78
Well Volume: 0.95 Gallons	Measurement Method: Elec. WLI Steel Tape
Sampling Information	
Weather Conditions: Temp: 80 Wind	d: NE 7 sky: Sunny
Sampling Method: Grundfos Bladder SSP Disp. I	
Dedicated Equipment: (Yes) No	Pumping Rate: 0,25 gpm
Well Purged Dry? Yes No	Time Pump Began: 1726 am / 600
Time Purged Dry?	Time of Sampling: 1746 am / 6m
Duplicate Sample? Yes (No) ID:	Sample EH: - 87.5
Sample Appearance: General: Class Colo	ir: Nave Phase: H. Sedi Odor: Nave
(4) Specific Temp D.O	. Turbidity Gallons SEQ
Time pH Cond. OC mg/L	NTU Removed # Comments:
1730 7.01 812 9.64 5	30 103,5 1 1
11/30 7.01 812 7.64 31	
	45 64.0 2 2
1734 6.94 822 9.45 4.	95 Q910 A 2
1734 6.94 822 9.45 4. 1738 6.92 828 9.28 3.	98 29,5 3 3
[734 6.94 822 9.45 4. [738 6.92 828 9.28 3. [742 6.92 833 9.21 3.	98 29,5 3 3 52 19,1 4 4
[734 6.94 822 9.45 4. [738 6.92 828 9.28 3. [742 6.92 833 9.21 3. [746 6.93 835 9.24 2.	98 29.5 3 3 52 19.1 4

Groundwater Assessment		Site:	Otter	Tail Pov	ver Co./ Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	11	
J. A Hoffman		Date: Lo	July 1	7	
		Unique Station	on iD:		
		Sample ID:	S-52		
Well Condition Well Locked? (Yes) No Well Labeled? (Yes) No Casing Straight? (Yes) No Repairs Necessary:		Protective Po State ID Tag Grout Seal In	? Yes		No No No
Well Information					
Well Depth: 88.30		Well Casing	Elevation:		1286.62
Constructed Depth:		Static Water	Elevation:		1216.21
Casing Diameter: 2"		Previous Sta	tic:		1216.16
Water Level Before Purge: 70,4/		Water Level	After Sample:		70.41
Well Volume: 2,91 Gallons		Measurement Method: Elec. WLI Steel Tape			
Sampling Information Weather Conditions: Temp: $\mbox{$\mathcal{Q}$}^{\mbox{$\mathbb{D}$}}$	Wind: か	- 5	Sky:	Fract	2
Sampling Method: Grundfos Cladder SS		Whale	Grab Other:	1 13	
Dedicated Equipment: (es) No		Pumping Ra	te: , 2 ·	 S	gpm
Well Purged Dry? Yes (No)		Time Pump I		1,32	am 7 pm
Time Purged Dry?		Time of Sam	pling: 18	80'	am /(pm)
Duplicate Sample? Yes (No) ID:		Sample EH:	- 18	35.8	
Sample Appearance: General: (1/20)	Color: No.	V Phase	None		Odor: MONR
/ こ Specific Temp Cond. OC	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1744 6.67 845 8.93	\37	0	3	1	
1756 6.68 845 8,81	,25	0	4	2	
1808 6.74 845 8.8		0	9	3	
				4	
				5	
Stabilized? Yes No	Amount Wat	er Removed:	9		Gallons
SIADINZEO A TEST NO					

Sampling Personnel:	Groundwater Assessment		Site:	Otter	Tail Pov	ver Co./ Hoot Lake
Unique Station ID: 806341	Sampling Personnel:		Facility ID:	SW-2	11	
Sample ID: S-10R	Tette Hoffman		Date: 10	July 1	7	
Well Condition Well Locked? Yes No State ID Tag? Yes No Tage ID			Unique Statio	on ID: 80634	1	
Well Locked? Yes No State ID Tag? Yes No Yes State ID Tag? Yes No Yes No Yes No State ID Tag? Yes No State ID Tag. Yes No State ID Tag? Yes No State ID Tag. Yes			Sample ID:	S-10F	2	
Well Depth:	Well Locked? Well Labeled? Casing Straight? Repairs Necessary:		State ID Tag	? Yes		No
Casing Diameter: 2" Previous Static: 309.53	Well Depth: \$0.62				ł	
Water Level Before Purge: 7 1,8 4 Well Volume: 1,4 3 Gallons Water Level After Sample: 7 1,8 4 Measurement Method: Elec. WLT) Steel Tape Sampling Information Weather Conditions: Temp: 8 Wind: W - 5 Sky: Fn 7 R Sampling Method: Grundfos Bladder SST) Disp. Bailer Whale Grab Other: Dedicated Equipment: Yes No Pumping Rate: 1 2 5 gpm Time Purged Dry? Yes No Time Pump Began: 1 7 0 0 am /pm Time Pump Began: 1 7 1 8 am /pm Duplicate Sample? Yes No ID: Sample EH: -43,5 Sample Appearance: General: Clear Color: Mo No Phase: No Octor: No						. 157-
Well Volume: Langer Gallons Measurement Method: Elec. WLD Steel Tape Sampling Information Weather Conditions: Temp: Second of the conditions: Wind: W - 5 Sky: Fra ? R Sampling Method: Grundfos Bladder SS/I) Disp. Bailer Whale Grab Other: Dedicated Equipment: Yes No Pumping Rate: 1.25 gpm Well Purged Dry? Yes No ID: Sample Pumping Rate: 1.25 gpm Time Purged Dry? Time of Sampling: 1.78 am /(pm) Sample Appearance: General: Clear Color: No Phase: Odor: No Odor: No No Odor: No						
Weather Conditions: Temp: (2) Wind: W 5 Sky: Fn 3 R Sampling Method: Grundfos Bladder SS/I) Disp. Bailer Whale Grab Other: Dedicated Equipment: Yes No Pumping Rate: 125 gpm Time Purged Dry? Time Purged Dry? Time of Sampling: 17 (2) am /(pm) Duplicate Sample? Yes No ID: Sample EH: -1/3 , 5 Sample Appearance: General: Clear Color: Arg are Phase: Arg are Odor: Arg are Sample Appearance: Specific Temp D. O. Turbidity Gallons SEQ Time pH Cond. Oc mg/L NTU Removed # 1702 La, La 91 Lo, 30 194 10, 44 1, 5 1 17/8 La, La 91 Lo, 22 188 8, 9 3, 0 2 17/8 Phase: Arg are Phase: Arg are Arg are Arg are Arg are 17/8 La, La 91 Lo, 22 188 8, 9 3, 0 <t< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td></t<>		-				
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: Sample EH: 718 am /pm Duplicate Sample Appearance: General: Clear Color: None Phase: No	Sampling Information					
Dedicated Equipment: Yes No Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample EH: -43,5 Sample Appearance: General: Clear Color: Many Phase: Wave Odor: No Me Phase:	Weather Conditions: Temp: 💲	Wind: W	• 5	Sky:	Fal	<u> </u>
Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Clear Color: Mone Phase: Work Odor: No	Sampling Method: Grundfos Bladder SS/1)	Disp. Bailer	Whale			,
Time Purged Dry?	Dedicated Equipment: Yes No		Pumping Rat	te: 125	· · · · · · · · · · · · · · · · · · ·	gpm
Duplicate Sample? Yes (No) ID: Sample EH: -43,5 Sample Appearance: General: Clear Color: Mone Phase: None Odor: Mone Phase: None Odor: Mone Phase: None Odor: Mone Phase: None Phase: None Odor: Mone Phase: None	Well Purged Dry? Yes No		Time Pump I	Began:	00	am /(pm)
Sample Appearance: General: Clear Color: Mone Phase: NONE Odor: NONE Time pH Cond. Cond. Cond. NTU Removed # Comments: 170ム ししり タロン 10.30 ・9月 10.4 しり 11 10.22 ・88 8・9 3.0 2 1718 (416) アクタ 10.34 ・77 6.7 4.5 3	Time Purged Dry?		Time of Sam	pling:	118	am /(pm)
Composition Cond. Comments: 1704 6.69 911 10.30 10.32 188 8.9 3.0 2 1718 (4.69 909 10.34 1.79 6.7 4.5 3 4 5 5	Duplicate Sample? Yes No ID:	>	Sample EH:	-4 3	,5	
Time pH Cond. °C mg/L NTU Removed # Comments: 1704 6,69 907 10.30 .94 10.4 1.5 1 1712 6.69 911 10.22 .88 8.9 3.0 2 1718 (9,69 909 10.24 .79 6.7 4.5 3	Sample Appearance: General: Clear	Color: MO	ne Phase	: NONE	•	Odor: NONR
1712 6.69 911 10.22 .88 8.9 3.0 2 1718 6.69 909 10.24 .79 6.7 4.5 3	l laborina la			i .		Comments:
1712 6.69 911 10.22 .88 8.9 3.0 2 1718 6.69 909 10.24 .79 6.7 4.5 3	1704 6,69 907 10,30	.94	10.4	1,5	1	
17/8 (6,69 909 10,24 ,79 6,7 4.5 3	1712 6.69 911 10,22	188	8,8	3,0	2	
5	1718 (0,69 909 10,24		1		3	
5					4	
Stabilized? Yes No Amount Water Removed: 4, 5 Gallons				<u> </u>	<u> </u>	4

Groundwater Assessment		Site:	Otter	Tail Pow	ver Co./ Hoot Lake
Sampling Personnel:		Facility ID:	SW-2	11	
Dustu Farasun		Date:) C	7 WINTS		
		Unique Station	77	632	810
		Sample ID:	S-13		
Well Condition					
Well Locked? (es) No		Protective Po			No
Well Labeled? (Yes No Casing Straight? (Yes No		State ID Tag			No
		Glout Seal II	ilact! (Tes	·	INU
Repairs Necessary: Well Information					
Well Depth: 90.27		Well Casing	Elevation:		1296.423
Constructed Depth: 90.19		Static Water	Elevation:	211,0	03
Casing Diameter: 2"		Previous Sta		0.67	3
Water Level Before Purge: 85.42		Water Level	After Sample:	85	.42
Well Volume: 0.79 Gallons		Measuremen	t Method:	Elec. 1	NI Steel Tape
Sampling Information					
Weather Conditions: Temp: 80	Wind: 人	E 7	Sky:	Sun	M
Sampling Method: Grundfos Gadder \$871	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: (458 No		Pumping Rat	te: 0,25	-	gpm
Well Purged Dry? Yes (No		Time Pump E	Began: 160		am / 🖘
Time Purged Dry?		Time of Sam		3	am / 📦
Duplicate Sample? Yes (No ID:		Sample EH:	-43.0		
Sample Appearance: General: Clear	Color: No	ere Phase	: Nare		Odor: Name
Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. °C	mg/L	NTU	Removed	#	Comments:
1605 7.03 836 11.15	8.39	0.2	1	1	
1609 7.01 838 11.07	830	0.1	2	2	
1613 6.99 838 11.06	8.29	0.2	3	3	
				4	
				5	
Stabilized? (Yes) No	Amount Wa	ter Removed:	3		Gallons

Groundwater Assessment	Site: 0	Otter Tail Power Co./ Ho	oot Lake
Sampling Personnel:	Facility ID:	SW-211	
Dusta Farasan	Date: 16 July	117	
	Unique Station ID:	806342	
		S-14R	
Well Condition			
Well Locked? (Yes No	Protective Posts?	No_	
Well Labeled? (es No	State ID Tag?	(és No	
Casing Straight? Yes No	Grout Seal Intact?	(es) No	
Repairs Necessary:			
Well Information		A \ A	
Well Depth: 97.1	Well Casing Elevation	4	
Constructed Depth:	Static Water Elevatio	n:	
Casing Diameter: 2"	Previous Static:		
Water Level Before Purge: 79.23	Water Level After Sa	mple: 79,23	
Well Volume: 1,29 Gallons	Measurement Method	l: Elec. WL) St	eel Tape
Sampling Information	_	:	
Weather Conditions: Temp: SO Wind: N	E 7 :	Sky: Sunny	
Sampling Method: Grundfos Badder SSP Disp. Bailer	Whale Grab (Other:	
Dedicated Equipment: (Yes No	Pumping Rate:	> 25 gpm	
Well Purged Dry? Yes (No)	Time Pump Began:	1643 an	1/66
Time Purged Dry?	Time of Sampling:	70 an	1/@
Duplicate Sample? Yes No ID:	Sample EH: $\rightarrow 12$	15	
Sample Appearance: General: Cleat Color: No	re Phase: U	Seel Odor: 5'u	(Fulous
Specific Temp D. O.	Turbidity Gallons	SEQ	1
Time pH Cond. oC mg/L	NTU Remove	1 1	ts:
1649 6.83 957 10.26 8.50	11.4 1.5	5 1	
1655 6.79 952 10.15 8.25	9.8 3	2	
1701 6.70 942 10.06 8.00	7.8 4.5		
		4	
	1		
		5	
Stabilized? (Yes) No Amount Wa	ter Removed: 4.5		