2024 Annual Groundwater Monitoring and Corrective Action Report

LOS CCR Landfill

Leland Olds Station

Stanton, North Dakota

Prepared for
Basin Electric Power Cooperative

Prepared by
Barr Engineering Co.

January 2025

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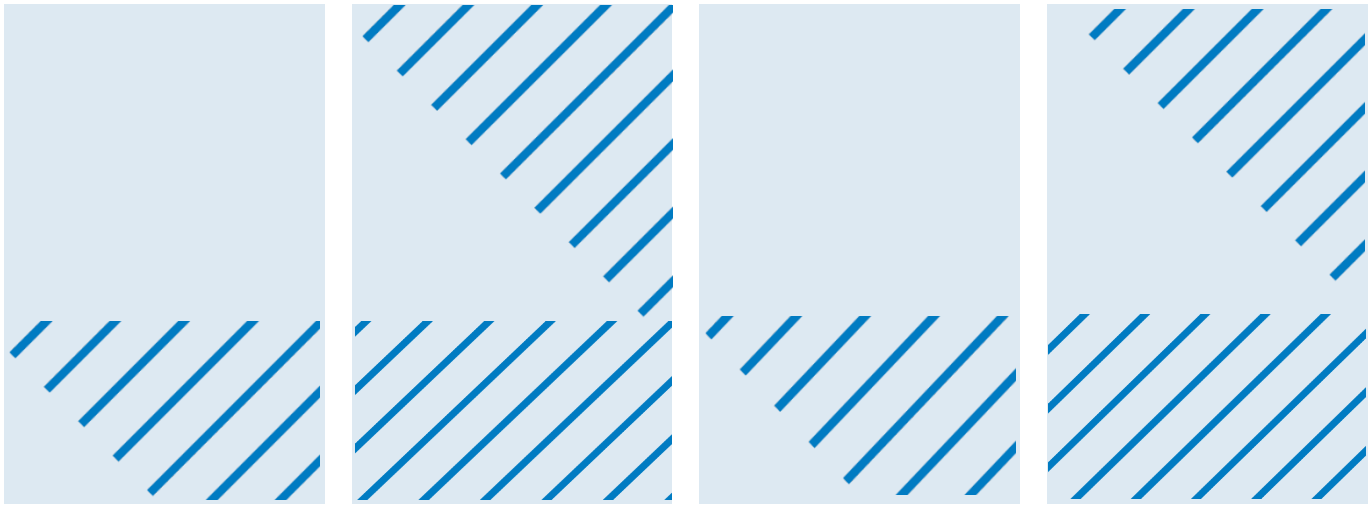
barr.com



2024 Annual Groundwater Monitoring and Corrective Action Report

January 2025

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Abbreviations

asml	above mean sea level
ASD	Alternative Source Demonstration
bgs	below ground surface
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
cm	centimeter
EPA	Environmental Protection Agency
FGD	Flue gas desulfurization
ft	feet
LOS	Leland Olds Station
NDAC	North Dakota Administrative Code
NDDEQ	North Dakota Department of Environmental Quality
sec	second
SSI	Statistically Significant Increase
TDS	Total Dissolved Solids

Executive Summary

This 2024 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Coal Combustion Residuals (CCR) landfill at Basin Electric Power Cooperative's (Basin Electric) Leland Olds Station (LOS; Site). Content of this report is to satisfy requirements of the federal CCR.

At the beginning, end, and throughout 2024, the CCR Unit was operating under a detection monitoring program as described in 40 CFR 257.94 and NDAC 33.1-20-08-06-04. Landfill expansion required the installation of two additional monitoring wells in late 2022: downgradient wells MW-2016-12 and MW-2016-13. Cell 2, encompassing 11.77 acres was certified and placed into service in early-2024. This program includes semi-annual detection monitoring events conducted in the early summer and fall.

Pursuant to § 257.94 and NDAC 33.1-20-08-06-04, statistically significant increases (SSIs) were determined for:

- May 2024: chloride at MW-2016-12 and MW-2016-13
- September 2024: chloride at MW-2016-12 and MW-2016-13

Subsequent determinations and actions (if any) will be addressed in the 2025 Annual Report. A successful alternative source demonstrations (ASD) was completed for the May 2024 SSIs. The ASD documentation is included in this report under Appendix B. An ASD for the September 2024 detection monitoring results is in progress, and results of the ASD are anticipated in 2025. Therefore, no assessment monitoring program (§ 257.95 and NDAC 33.1-20-08-06-04) or related corrective or remedial measures (§§ 257.96, 257.97, and 257.98; NDAC 33.1-20-08-06-06, -07, and -08) were necessary.

1 Introduction

Basin Electric Power Cooperative (Basin Electric) owns Leland Olds Station (LOS), comprised of a coal-fired generating station consisting of two power generating units, located southeast of Stanton, Mercer County, North Dakota (Figure 1). Unit 1 coal-based operations began in 1966 and Unit 2 operations began in 1975. One coal combustion residual (CCR) unit (Glenharold Landfill 0143; Site), as defined by 40 CFR 257.53 and North Dakota Administrative Code (NDAC) 33.1-20-08-01, is located approximately three miles southwest of the generating units and office complex. The landfill was permitted and began accepting CCR in 1992. The most recent Permit 0143 issued by North Dakota Department of Environmental Quality (NDDEQ) will expire on June 28, 2027, and the most recent cell (with CCR Rule-compliant liner and leachate collection system) was constructed in 2023.

The CCR unit is a landfill containing coal combustion by-products including fly ash, bottom ash, and flue gas desulfurization (FGD) waste. The CCRs are managed at the Site along with other minor wastes accepted as per the NDDEQ permit. The CCR unit 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) and the NDDEQ CCR Rule (NDAC Title 33.1, Article 20, Chapter 8).

This 2024 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the CCR landfill at the Site. No corrective actions were required or conducted in 2024.

Basin Electric utilizes a consulting firm, Barr Engineering Co. (Barr) to assist in groundwater reporting and analysis. Barr is familiar with the site, has reviewed the historical groundwater data and CCR information for the site, and is knowledgeable about facility design and operation.

Additional Site monitoring information, including CCR reports and certifications can be found on Basin Electric's CCR website: Glenharold Mine CCR Landfill - LOS - Basin Electric Power Cooperative.

1.1 Physical Setting

The geology underlying the site includes mine spoils underlain by the Sentinel Butte Formation. This formation is comprised of continental deposits in excess of 1,000-feet thick, consisting of dense clay, weakly cemented sandstone, mudstone, and lignite beds.

The base of the LOS CCR Landfill is underlain by approximately 50 feet of clay-rich mine spoils that overlies the Lower Sentinel Butte Formation. At the site, the Sentinel Butte is comprised primarily of dense clay with a trace of very fine sand and sparse beds of lignite typically ranging from 6- to 9-feet thick.

The uppermost aquifer in which the CCR network wells are screened is found within a 6- to 9-foot unmined lignite bed within the bedrock, located at depths ranging from roughly 86 to 125 feet below ground surface (ft bgs). The elevation of the lignite bed varies across the site by approximately 32 feet, ranging from 1,811 feet above mean sea level (ft amsl) at MW-2016-4 to 1,843 ft amsl at MW-2016-1. The groundwater surface within the water-bearing zone generally slopes from the south to the north across the Landfill footprint. Aquifer testing completed at monitoring wells MW-2016-4, MW-2016-8, and MW-2016-10 in 2016 indicates an average hydraulic conductivity of 1.21×10^{-5} centimeters per second for the saturated materials.

Additional Site information can be found on Basin Electric's CCR website in the CCR Groundwater Monitoring System Report (AECOM, 2017).

1.2 Purpose

As stated in § 257.90(e) and NDAC 33.1-20-08-06-01(e), the Annual Report must:

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

1.3 CCR Rule Requirements

Additional requirements for the Annual Report, as outlined in § 257.90(e) and NDAC 33.1-20-08-06-01(e), and this Site's compliance with the CCR Rules, are summarized in Table 1.

Table 1 CCR Rule Requirements and Compliance

EPA CCR Rule Reference (40 CFR)	NDDEQ CCR Rule Reference (NDAC)	Content Required in Report	Location
§ 257.90(e)(1)	§ 33.1-20-08-06-01(e)(1)	**Monitoring System Figure:** A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit.	Section 2.1 Groundwater Monitoring System; see Figure 1
§ 257.90(e)(2)	§ 33.1-20-08-06-01(e)(2)	**Monitoring System Adjustments**: Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.	Section 2.1.1 Changes to Groundwater Monitoring System
§ 257.90(e)(3)	§ 33.1-20-08-06-01(e)(3)	**Data and Collection Summary**: In addition to all the monitoring data obtained under §257.90 through §257.98 and §33.1-20-08-06, a summary including the number of groundwater samples that were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs.	Section 2.3 Data and Collection Summary; monitoring data included in Table 3, Table 4, Table 5, Appendix A, and Appendix C
§ 257.90(e)(4)	§ 33.1-20-08-06-01(e)(4)	**Monitoring Program**: A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels).	Not applicable – No transition between monitoring programs was necessary
§ 257.90(e)(5)	§ 33.1-20-08-06-01(e)(5)	**Other Information**: Other information required, if applicable, to be included in the annual report as specified in §257.90 through §257.98 and §33.1-20-08-06.	Section 2.2 Actions Completed/Problems Encountered; Appendix B
§ 257.90(e)(6)	n/a	**Executive Summary:** A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.	Executive Summary

2 Groundwater Monitoring Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR unit in 2024. A description of the groundwater monitoring system is included in Section 2.1, key actions completed and problems encountered are described in Section 2.2, the monitoring and analytical results are described in Section 2.3, and key activities planned for 2025 are described in Section 2.4.

2.1 Groundwater Monitoring System

The certified groundwater monitoring well network around the CCR unit consists of two background wells and seven downgradient wells, sampled for groundwater analysis on a semi-annual basis as described in Table 2 below:

Table 2 Groundwater Monitoring Network

CCR Unit	Background Wells	Downgradient Wells
Active Landfill	MW-2016-6 and MW-2016-8	MW-2016-2, MW-2016-3, MW-2016-9, MW-2016-10, and MW-2016-11
Landfill Expansion Area		MW-2016-12 and MW-2016-13

The wells monitor the uppermost aquifer underlying the CCR unit in the lignite beds of the Sentinel Butte Formation approximately 85 to 140 ft bgs. Well locations are shown on Figure 2. Monitoring wells MW-2016-12 and MW-2016-13, installed in October 2022, were placed in advance of westward landfill expansion to be used as downgradient monitoring wells.

Prior to the landfill expansion, monitoring wells MW-2016-3, MW-2016-4, and MW-2016-5 were evaluated as a background wells. Background wells monitor background water quality that is not potentially influenced by the presence of the CCR unit. Two monitoring wells, MW-2016-1 and MW-2016-7 have been historically excluded from the groundwater monitoring network due to insufficient water production and screen interval placement that is not representative of the uppermost aquifer monitored at the site, respectively. Excluded wells MW-2016-1 and MW-2016-7 and background wells MW-2016-4 and MW-2016-5 were abandoned in Fall 2022.

Baseline monitoring initiated in August 2016 for wells in the Active Landfill portion of the monitoring network and included sampling groundwater over eight baseline monitoring events. The results of baseline monitoring are discussed in previous Annual Reports.

Detection monitoring events prior to 2024 and in 2024 were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (SAP) (AECOM, 2022), which is included in the facility's Operating Record. The CCR Landfill was placed in Detection monitoring in October 2017, with the first Detection monitoring groundwater sampling event completed in April 2018. Detection monitoring events have been completed semi-annually since April 2018. The results of previous

Detection monitoring events were presented and discussed in the previous Annual Reports, which can be found on Basin Electric's CCR website.

2.1.1 Changes to Groundwater Monitoring System

Monitoring locations MW-2016-12 and MW-2016-13 were added to the monitoring network in late 2022 in anticipation of waste placement in the landfill expansion area. Baseline monitoring began in May 2023 at both MW-2016-12 and MW-2016-13. Nine baseline monitoring events were conducted at MW-2016-12 and four at MW-2016-13 in 2023. In 2024, two baseline monitoring events were conducted at MW-2016-13. Baseline monitoring at MW-2016-13 will continue until at least eight samples have been collected. Baseline sampling results for MW-2016-13 are included in Appendix D. MW-2016-12 and MW-2016-3 were included in the detection monitoring program for the first time in May 2024. The system described in Section 2.1 and shown on Figure 2 supplanted the groundwater monitoring system described in the Groundwater Monitoring System Certification (AECOM, 2017).

2.2 Actions Completed/Problems Encountered

The following actions were completed in 2024:

- **Background Update:** Background was statistically evaluated and updated to include data through 2023 from upgradient wells MW-2016-3[1], MW-2016-4[2], MW-2016-5[2], MW-2016-6, and MW-2016-8 in accordance with the Groundwater Statistical Method Selection Certification (AECOM, 2017). The updated prediction limits were used for the spring and fall 2024 detection monitoring events.

- **Baseline Sampling:** Baseline groundwater samples were collected at MW-2016-13 in May and September 2024 (Appendix D).

- **Detection Monitoring Sampling:** Groundwater samples were collected from each well in the groundwater monitoring system on May 21, 2024, and September 10-11, 2024. Groundwater samples were analyzed for Appendix III constituents, per the detection monitoring program of the CCR Rules (§ 257.94 and NDAC 33.1-20-08-06-04) (Table 3).

- **SSI Evaluation:** SSI evaluations were conducted in accordance with the Groundwater Statistical Method Selection Certification (AECOM, 2017) for the May 2024 and September 2024 detection monitoring events. Both detection monitoring events resulted in verified SSIs (Table 4).

- **Alternative Source Demonstration (ASD):** An ASD was conducted on the verified SSIs for the May 2024 detection monitoring event. The ASD demonstrated an alternative source, as allowed by the CCR Rules (§ 257.94(e)(2) and NDAC 33.1-20-08-06-04(e)(2)). An ASD for the September 2024 detection monitoring event is in progress and will be completed within 90 days of the SSI determination. More details are provided in Section 2.3. Subsequent determinations and actions (if any) will be addressed in the 2025 Annual Report.

[1] MW-2016-3 was considered a background well through 2023. In 2024, it was classified as a downgradient well in anticipation of future waste placement in the landfill expansion area.
[2] MW-2016-4 and MW-2016-5 were abandoned in Fall 2022. Samples from these locations were included in the background update.

The following issues were encountered in 2024:

- The water elevations measured at MW-2016-11 and MW-2016-13 were lower than expected based on the piezometric surface interpreted from the other monitoring locations. This may be attributed to slow well recovery.

2.3 Data and Collection Summary

2.3.1 May 2024 Detection Monitoring Event

Groundwater samples were collected from the nine groundwater monitoring network wells at the Site on May 21, 2024. Two SSIs for chloride at MW-2016-12 and MW-2016-13 were identified. No verification resampling was performed. A summary of results is included in Table 5. Field data sheets and analytical laboratory reports for detection monitoring sampling are included in Appendix A. Water level contours are shown on Figure 3, and flow calculations are included in Appendix C.

An ASD was conducted on the verified SSIs and was able to successfully demonstrate that "a source other than the CCR unit" and/or statistical methods resulted in the SSIs, as allowed by § 257.94(e)(2) and NDAC 33.1-20-08-06-04(e)(2). The Alternative Source Demonstration: May 2024 Event Report is included in Appendix B.

2.3.2 September 2024 Detection Monitoring Event

Groundwater samples were collected from the nine groundwater monitoring network wells at the Site on September 10-11, 2024. Two SSIs for chloride at MW-2016-12 and MW-2016-13 were identified. No verification resampling was performed. A summary of results is included in Table 5. Field data sheets and analytical laboratory reports for detection monitoring sampling are included in Appendix A. Water level contours are shown on Figure 3, and flow calculations are included in Appendix C.

An ASD was ongoing at the end of 2024. If the ASD is not successful, appropriate actions will be initiated per the CCR Rule as applicable.

2.4 Activities for Upcoming Year

The following key activities for analytical results and statistical evaluations are planned for 2025:

- Complete the ASD or assessment monitoring determination for the September 2024 detection monitoring event in accordance with the Statistical Certification (AECOM, 2017).
- Evaluate analytical results from 2025 semi-annual detection monitoring events for SSIs according to the Statistical Certification (AECOM, 2017).
- Continue baseline sample collection at MW-2016-13 until eight baseline samples have been collected.
- Further monitor water elevations at MW-2016-13. Review the conceptual site model and consider recommendations for improvements to the monitoring well network if needed.

3 References

AECOM, 2017. Groundwater Monitoring System Report, Leland Olds Station. Prepared for Basin Electric Power Cooperative. October 2017.

AECOM, 2022. Sampling and Analysis Plan, Revision 1, CCR Monitoring Program, Leland Olds Station, Prepared for Basin Electric Power Cooperative. June 2022.

Tables

Table 3 Sampling Event Summary

Table 3
Sampling Event Summary
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

Event Classification and Number	Monitoring Well	Up or Down Gradient	Event date	No. Samples
Detection Monitoring Event #1	MW-2016-2	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-3	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-6	Up	5/21/2024	1
Detection Monitoring Event #1	MW-2016-8	Up	5/21/2024	2
Detection Monitoring Event #1	MW-2016-9	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-10	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-11	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-12	Down	5/21/2024	1
Detection Monitoring Event #1	MW-2016-13	Down	5/21/2024	1
Detection Monitoring Event #2	MW-2016-2	Down	9/11/2024	1
Detection Monitoring Event #2	MW-2016-3	Down	9/11/2024	1
Detection Monitoring Event #2	MW-2016-6	Up	9/11/2024	1
Detection Monitoring Event #2	MW-2016-8	Up	9/11/2024	2
Detection Monitoring Event #2	MW-2016-9	Down	9/10/2024	1
Detection Monitoring Event #2	MW-2016-10	Down	9/11/2024	1
Detection Monitoring Event #2	MW-2016-11	Down	9/11/2024	1
Detection Monitoring Event #2	MW-2016-12	Down	9/10/2024	1
Detection Monitoring Event #2	MW-2016-13	Down	9/10/2024	1

Table 4 Statistical Evaluation Summary

Table 4
Statistical Evaluation Summary
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

Spring 2024

	Appendix III Constituents						
Well	**Boron (T)**	**Calcium (T)**	**Chloride**	**Fluoride**	**pH**	**Sulfate**	**TDS**
MW-2016-2							
MW-2016-3							
MW-2016-9							
MW-2016-10							
MW-2016-11							
MW-2016-12							
MW-2016-13							

Fall 2024

	Appendix III Constituents						
Well	**Boron (T)**	**Calcium (T)**	**Chloride**	**Fluoride**	**pH**	**Sulfate**	**TDS**
MW-2016-2							
MW-2016-3							
MW-2016-9							
MW-2016-10							
MW-2016-11							
MW-2016-12							
MW-2016-13							

Sample had a value higher than the prediction limit determined from background data and is a verified SSI

Sample did not have a value higher than the prediction limit determined from background data

pH: two-sided prediction limit; color indicates sample higher and/or lower than prediction limits

Table 5 Water Quality Analytical Data Summary

Table 5
Water Quality Analytical Data Summary
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

		Location	MW-2016-2	MW-2016-2	MW-2016-3	MW-2016-3	MW-2016-6	MW-2016-6	MW-2016-8		MW-2016-8		MW-2016-9	MW-2016-9
		Date	5/21/2024	9/11/2024	5/21/2024	9/11/2024	5/21/2024	9/11/2024	5/21/2024		9/11/2024		5/21/2024	9/10/2024
		Sample Type	N	N	N	N	N	N	N	FD	N	FD	N	N
Parameter	Analysis Location	Units												
Appendix III														
Boron, total	Lab	mg/l	< 0.5 U	**0.24**	< 0.5 U	**0.22**	< 0.5 U	**0.24**	< 0.5 U	< 0.5 U	**0.22**	**0.22**	< 0.5 U	**0.23**
Calcium, total	Lab	mg/l	**8.54**	**9.87**	**4.43**	**4.42**	**8.29**	**7.76**	**13.6**	**13.2**	**13.2**	**12.7**	**6.65**	**6.84**
Chloride	Lab	mg/l	**13.1**	**14.4**	**33.6**	**36.7**	**7.0**	**8.2**	**8.5**	**8.5**	**9.8**	**9.8**	**18.0**	**19.6**
Fluoride	Lab	mg/l	**0.55**	**0.49**	**0.72**	**0.67**	**0.49**	**0.44**	**0.36**	**0.36**	**0.32**	**0.32**	**0.57**	**0.52**
pH	Field	pH units	**8.06**	**7.96**	**8.10**	**8.09**	**7.93**	**7.9**	**7.95**	--	**7.85**	--	**7.89**	**7.86**
Solids, total dissolved	Lab	mg/l	**1750**	**1730**	**1510**	**1480**	**2080**	**2060**	**2330**	**2320**	**2310**	**2330**	**1850**	**1710**
Sulfate, as SO4	Lab	mg/l	**269**	**242**	**34.4**	**37.2**	**648**	**566**	**735**	**739**	**685**	**671**	**204**	**177**

-- Not analyzed/Not available.
N Sample Type: Normal
FB Sample Type: Field Blank
FD: Sample Type: Field Duplicate
U: The analyte was analyzed for, but was not detected.

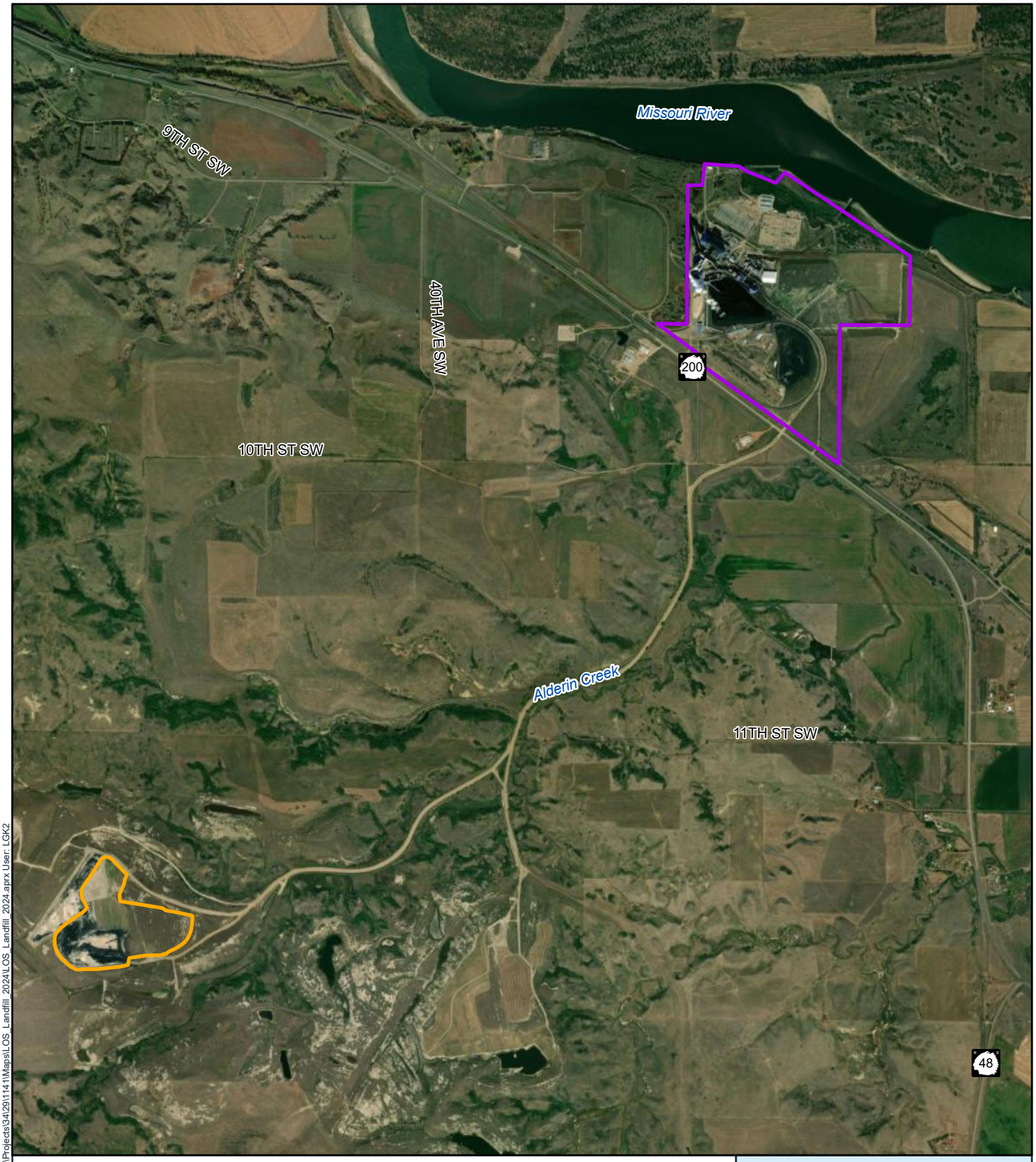
Table 5
Water Quality Analytical Data Summary
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

		Location	MW-2016-10	MW-2016-10	MW-2016-11	MW-2016-11	MW-2016-12	MW-2016-12	MW-2016-13	MW-2016-13
		Date	5/21/2024	9/11/2024	5/21/2024	9/11/2024	5/21/2024	9/10/2024	5/21/2024	9/10/2024
		Sample Type	N	N	N	N	N	N	N	N
Parameter	Analysis Location	Units								
Appendix III										
Boron, total	Lab	mg/l	< 0.5 U	**0.21**	< 0.5 U	**0.26**	< 0.5 U	**0.23**	< 0.5 U	**0.27**
Calcium, total	Lab	mg/l	**5.48**	**5.50**	**6.91**	**6.66**	**12.2**	**11.6**	**13.5**	**11.9**
Chloride	Lab	mg/l	**13.7**	**15.4**	**21.4**	**22.1**	**44.2**	**46.7**	**55.3**	**57.5**
Fluoride	Lab	mg/l	**0.60**	**0.55**	**0.59**	**0.54**	**0.71**	**0.66**	**0.63**	**0.61**
pH	Field	pH units	**8.15**	**8.09**	**7.95**	**7.99**	**7.93**	**7.87**	**7.79**	**7.76**
Solids, total dissolved	Lab	mg/l	**1690**	**1690**	**1640**	**1640**	**1530**	**1520**	**1600**	**1580**
Sulfate, as SO4	Lab	mg/l	**310**	**320**	**230**	**201**	**16.8**	**19.5**	**12.9**	**13.3**

-- Not analyzed/Not available.
N Sample Type: Normal
FB Sample Type: Field Blank
FD: Sample Type: Field Duplicate
U: The analyte was analyzed for, but was not detected.

Figures

Figure 1 Site Setting



Leland Olds Power Plant

LOS Landfill

N

0 1,500 3,000

Feet

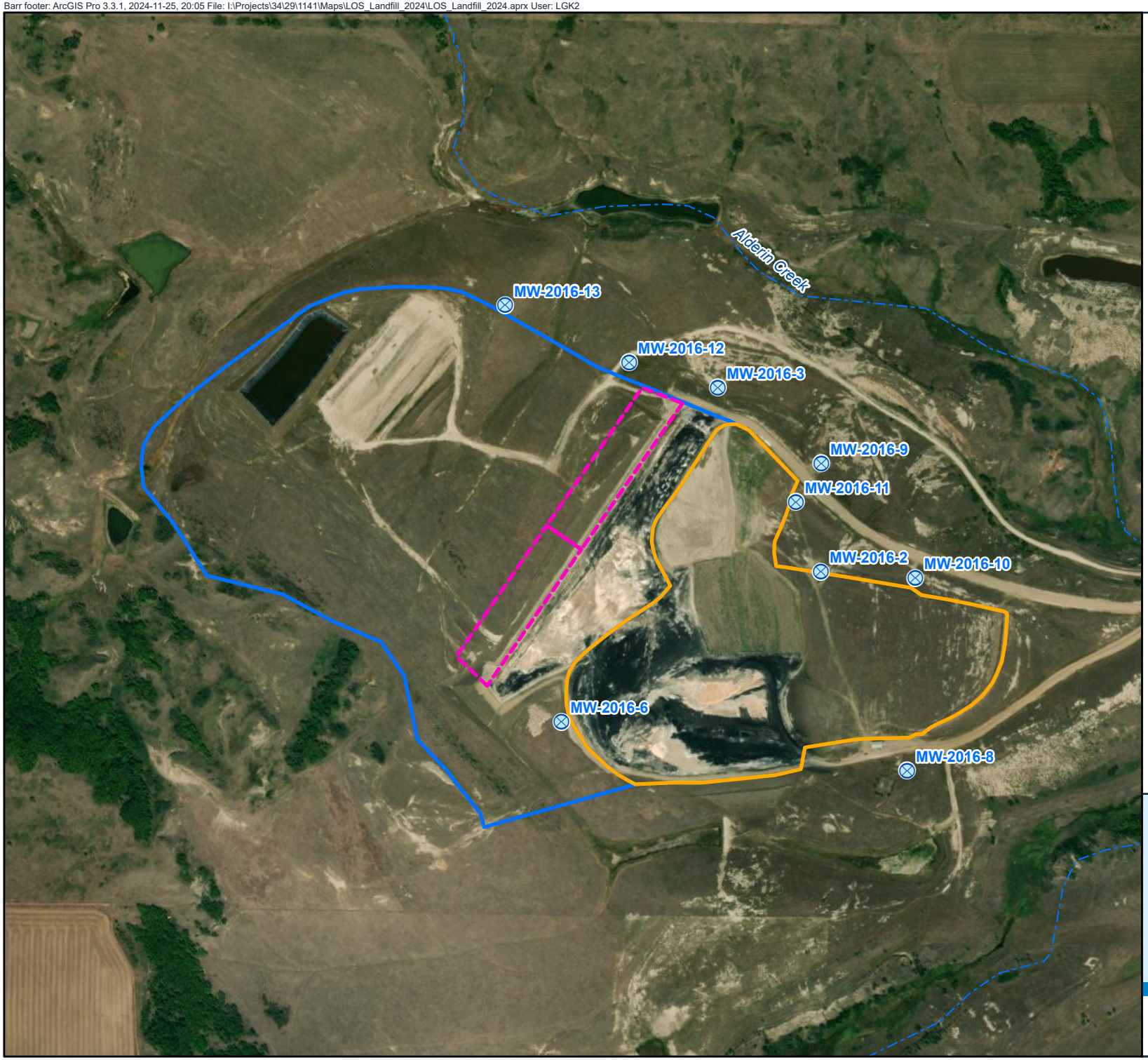
Imagery: ESRI 2024

Site Setting
Leland Olds Station- Landfill
2024 Annual Monitoring Report
Basin Electric Power Cooperative
Stanton, North Dakota

FIGURE 1

BARR

Figure 2 Monitoring Network



Monitoring Well

Existing Limits of Waste

Current Waste Placement as of 2025 (approximate)

Expansion Limits of Waste

Stream, Intermittent

N

0 400 800

Feet

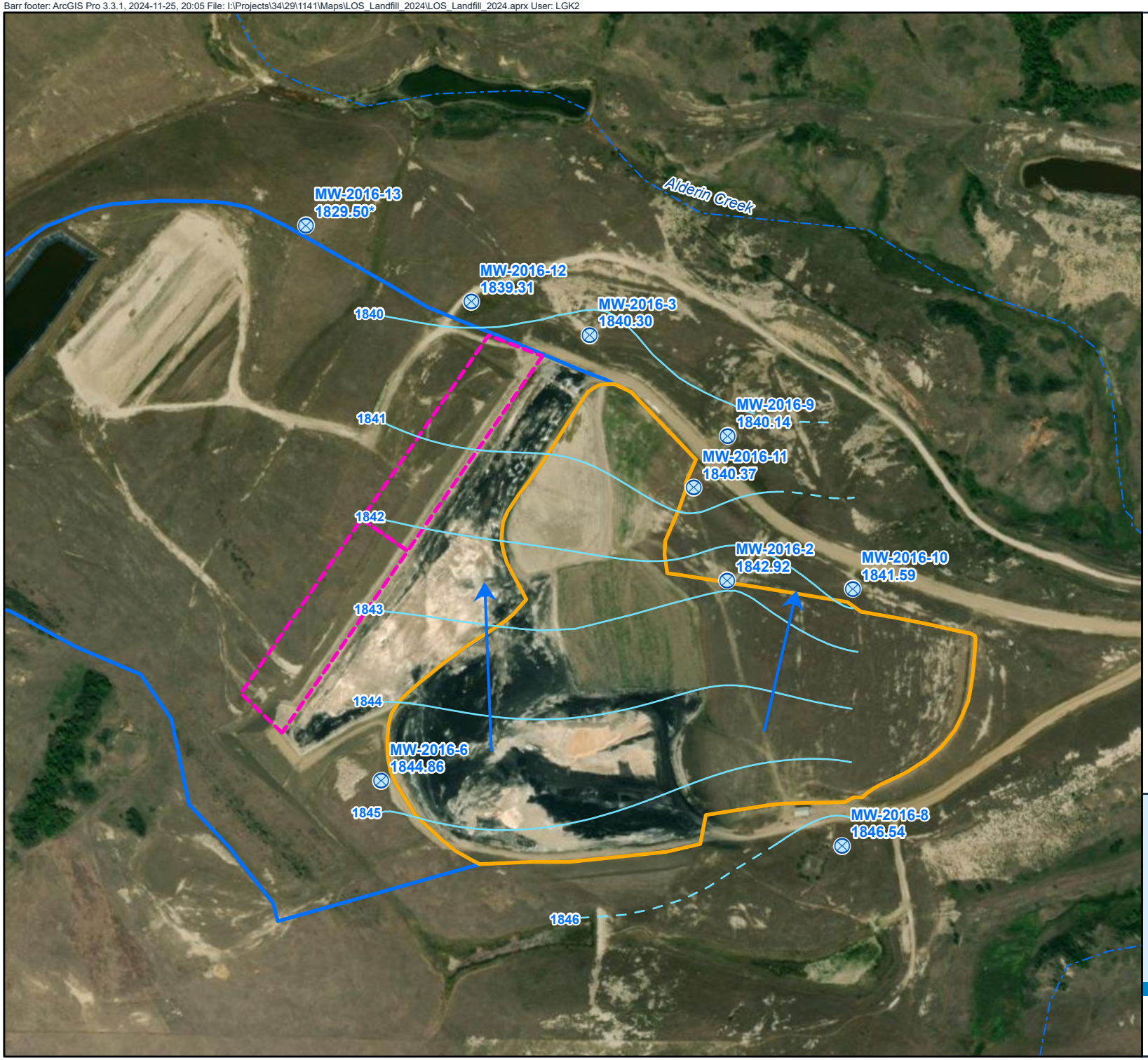
Imagery: ESRI 2024

Monitoring Network
Leland Olds Station- Landfill
2024 Annual Monitoring Report
Basin Electric
Power Cooperative
Stanton, North Dakota

FIGURE 2

BARR

Figure 3 Spring 2024 Potentiometric Surface



- Monitoring Well
- Existing Limits of Waste
- Current Waste Placement as of 2025 (approximate)
- Expansion Limits of Waste
- Groundwater Contour
- Inferred Groundwater Contour
- Flow Direction
- Stream, Intermittent

Notes:
* = omitted from contour interpolation
Groundwater elevations were obtained on May 22, 2024

N

0 300 600
Feet

Imagery: ESRI 2024

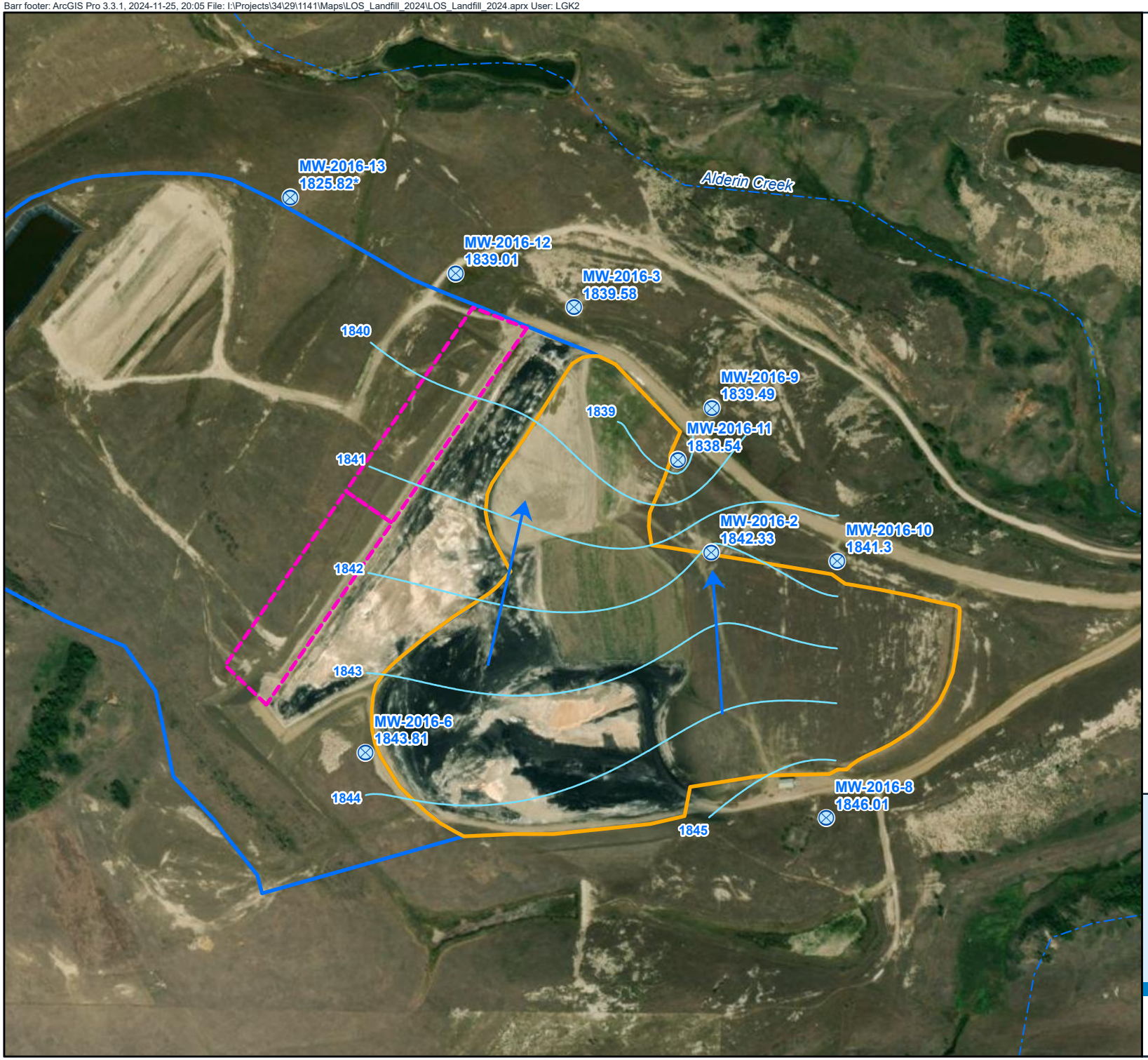
Spring 2024
Potentiometric Surface
Leland Olds Station- Landfill
2024 Annual Monitoring Report
Basin Electric Power Cooperative
Stanton, North Dakota

FIGURE 3

BARR

Figure 4 Fall 2024 Potentiometric Surface

Barr footer: ArcGIS Pro 3.3.1, 2024-11-25, 20:05 File: I:\Projects\34\29\1141\Maps\LOS_Landfill_2024\LOS_Landfill_2024.aprx User: LGK2



- Monitoring Well
- Existing Limits of Waste
- Current Waste Placement as of 2025 (approximate)
- Expansion Limits of Waste
- Groundwater Contour
- Flow Direction
- Stream, Intermittent

Notes:
Groundwater elevations were obtained on Sept. 10, 2024

N

0 300 600
Feet

Imagery: ESRI 2024

Fall 2024
Potentiometric Surface
Leland Olds Station- Landfill
2024 Annual Monitoring Report
Basin Electric Power Cooperative
Stanton, North Dakota

FIGURE 4

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Appendices

Appendix A Lab and Field Reports

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

Account #: 2040 **Client:** Basin Electric Power Cooperative
Workorder: LOS-SP-143 Landfill CCR Wells (49483) **PO:** 790708-04

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

Claudette Carroll, Lab Manager Bismarck, ND

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

NEW ULM LAB CERTIFICATIONS:
MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS:
MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

MINNESOTA VALLEY TESTING LABORATORIES, INC.
1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483001 **Date Collected:** 05/21/2024 07:45 **Matrix:** Groundwater
Sample ID: MW-2016-13 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**12.9**	mg/L	5	1		05/29/2024 11:13	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1		05/29/2024 11:07	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:20	
Calcium	**13.5**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:03	
Lithium	<0.02	mg/L	0.02	1	05/23/2024 16:35	05/28/2024 08:58	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	05/23/2024 16:35	05/31/2024 18:42	
Arsenic	**0.0022**	mg/L	0.002	5	05/23/2024 16:35	05/31/2024 18:42	
Barium	**0.0576**	mg/L	0.002	5	05/23/2024 16:35	05/31/2024 18:42	
Beryllium	<0.0005	mg/L	0.0005	5	05/23/2024 16:35	05/31/2024 18:42	
Cadmium	<0.0005	mg/L	0.0005	5	05/23/2024 16:35	05/31/2024 18:42	
Chromium	<0.002	mg/L	0.002	5	05/23/2024 16:35	05/31/2024 18:42	
Cobalt	<0.002	mg/L	0.002	5	05/23/2024 16:35	05/31/2024 18:42	
Lead	<0.0005	mg/L	0.0005	5	05/23/2024 16:35	05/31/2024 18:42	
Molybdenum	**0.0692**	mg/L	0.002	5	05/23/2024 16:35	06/03/2024 16:08	
Selenium	<0.005	mg/L	0.005	5	05/23/2024 16:35	05/31/2024 18:42	
Thallium	<0.0005	mg/L	0.0005	5	05/23/2024 16:35	05/31/2024 18:42	
Method: SM4500-Cl-E 2011							
Chloride	**55.3**	mg/L	2.0	1		05/30/2024 14:57	
Method: SM4500-F-C-2011							
Fluoride	**0.63**	mg/L	0.1	1		05/23/2024 20:21	
Method: USGS I-1750-85							
Total Dissolved Solids	**1600**	mg/L	10	1		05/24/2024 09:20	

Report Date: Friday, June 7, 2024 3:47:25 PM

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483002 **Date Collected:** 05/21/2024 10:05 **Matrix:** Groundwater
Sample ID: MW-2016-12 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**16.8**	mg/L	5	1		05/29/2024 11:14	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:22	
Calcium	**12.2**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:04	
Method: SM4500-Cl-E 2011							
Chloride	**44.2**	mg/L	2.0	1		05/30/2024 14:58	
Method: SM4500-F-C-2011							
Fluoride	**0.71**	mg/L	0.1	1		05/23/2024 20:27	
Method: USGS I-1750-85							
Total Dissolved Solids	**1530**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483003 **Date Collected:** 05/21/2024 11:01 **Matrix:** Groundwater
Sample ID: MW-2016-3 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**34.4**	mg/L	5	1		05/29/2024 11:15	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:23	
Calcium	**4.43**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:05	
Method: SM4500-Cl-E 2011							
Chloride	**33.6**	mg/L	2.0	1		05/30/2024 14:59	
Method: SM4500-F-C-2011							
Fluoride	**0.72**	mg/L	0.1	1		05/23/2024 20:34	
Method: USGS I-1750-85							
Total Dissolved Solids	**1510**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483004 **Date Collected:** 05/21/2024 12:10 **Matrix:** Groundwater
Sample ID: MW-2016-6 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**648**	mg/L	25	5		05/29/2024 11:39	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:24	
Calcium	**8.29**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:07	
Method: SM4500-Cl-E 2011							
Chloride	**7.0**	mg/L	2.0	1		05/30/2024 15:00	
Method: SM4500-F-C-2011							
Fluoride	**0.49**	mg/L	0.1	1		05/23/2024 20:40	
Method: USGS I-1750-85							
Total Dissolved Solids	**2080**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483005 **Date Collected:** 05/21/2024 13:50 **Matrix:** Groundwater
Sample ID: MW-2016-9 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**204**	mg/L	5	1		05/29/2024 11:23	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:24	
Calcium	**6.65**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:08	
Method: SM4500-Cl-E 2011							
Chloride	**18.0**	mg/L	2.0	1		05/30/2024 15:02	
Method: SM4500-F-C-2011							
Fluoride	**0.57**	mg/L	0.1	1		05/23/2024 20:46	
Method: USGS I-1750-85							
Total Dissolved Solids	**1850**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483006 **Date Collected:** 05/21/2024 14:10 **Matrix:** Groundwater
Sample ID: MW-2016-11 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**230**	mg/L	5	1		05/29/2024 11:24	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:25	
Calcium	**6.91**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:09	
Method: SM4500-Cl-E 2011							
Chloride	**21.4**	mg/L	2.0	1		05/30/2024 15:03	
Method: SM4500-F-C-2011							
Fluoride	**0.59**	mg/L	0.1	1		05/23/2024 20:52	
Method: USGS I-1750-85							
Total Dissolved Solids	**1640**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483007 **Date Collected:** 05/21/2024 08:44 **Matrix:** Groundwater
Sample ID: MW-2016-8 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**735**	mg/L	25	5		05/29/2024 11:36	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:26	
Calcium	**13.6**	mg/L	5	5	05/23/2024 16:35	05/30/2024 12:50	
Method: SM4500-Cl-E 2011							
Chloride	**8.5**	mg/L	2.0	1		05/30/2024 15:04	
Method: SM4500-F-C-2011							
Fluoride	**0.36**	mg/L	0.1	1		05/23/2024 20:59	
Method: USGS I-1750-85							
Total Dissolved Solids	**2330**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483008 **Date Collected:** 05/21/2024 08:44 **Matrix:** Groundwater
Sample ID: Dup **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**739**	mg/L	50	10		05/29/2024 11:37	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:26	
Calcium	**13.2**	mg/L	5	5	05/23/2024 16:35	05/30/2024 12:51	
Method: SM4500-Cl-E 2011							
Chloride	**8.5**	mg/L	2.0	1		05/30/2024 15:10	
Method: SM4500-F-C-2011							
Fluoride	**0.36**	mg/L	0.1	1		05/23/2024 21:05	
Method: USGS I-1750-85							
Total Dissolved Solids	**2320**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483009 **Date Collected:** 05/21/2024 10:51 **Matrix:** Groundwater
Sample ID: MW-2016-10 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**310**	mg/L	25	5		05/29/2024 11:38	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:27	
Calcium	**5.48**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:11	
Method: SM4500-Cl-E 2011							
Chloride	**13.7**	mg/L	2.0	1		05/30/2024 15:11	
Method: SM4500-F-C-2011							
Fluoride	**0.60**	mg/L	0.1	1		05/23/2024 21:11	
Method: USGS I-1750-85							
Total Dissolved Solids	**1690**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49483010 **Date Collected:** 05/21/2024 10:50 **Matrix:** Groundwater
Sample ID: MW-2016-2 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**269**	mg/L	5	1		05/29/2024 11:28	
Method: EPA 6010D							
Boron	<0.5	mg/L	0.5	5	05/23/2024 16:35	05/29/2024 10:29	
Calcium	**8.54**	mg/L	1	1	05/23/2024 16:35	05/30/2024 14:13	
Method: SM4500-Cl-E 2011							
Chloride	**13.1**	mg/L	2.0	1		05/30/2024 15:12	
Method: SM4500-F-C-2011							
Fluoride	**0.55**	mg/L	0.1	1		05/23/2024 21:18	
Method: USGS I-1750-85							
Total Dissolved Solids	**1750**	mg/L	10	1		05/24/2024 09:20	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

QC Results Summary — WO #: 49483

Sulfate — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			100	100.0		85	115		
LFB			100	108.0		85	115		
LFB			100	109.0		85	115		
LFB			100	104.0		85	115		
LFB			100	106.0		85	115		
LFB			100	105.0		85	115		
LFB			100	101.0		85	115		
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MS/MSD	49107006		100	107.8	106.0	85	115	1.9	20
MS/MSD	49141003		1000	93.3	86.4	85	115	2.9	20
MS/MSD	49354001		100	94.5	103.2	85	115	8.6	20
MS/MSD	49505001		500	106.5	109.4	85	115	2.1	20
MS/MSD	49505012		500	94.6	93.7	85	115	0.5	20
MS/MSD	49511001		500	81.0	86.7	85	115	3.5	20

Chloride — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	91.0		90	110		
LFB			30	92.3		90	110		
LFB			30	92.2		90	110		
LFB			30	91.8		90	110		
LFB			30	91.3		90	110		
MB		<2.0							
MB		<2.0							

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Chloride — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	49505001		30	97.3	96.5	80	120	1.0	20
MS/MSD	49630001		30	96.8	96.3	80	120	0.0	20

Boron — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	104.0		85	115		
MB		<0.1							
PDS/PDSD	48680001		4	79.9	79.7	75	125	0.2	20
PDS/PDSD	49353001		2	88.6	87.9	75	125	0.6	20
PDS/PDSD	49354001		4	94.0	93.7	75	125	0.2	20
PDS/PDSD	49483001		2	110.0	109.0	75	125	1.0	20
PDS/PDSD	49483010		2	108.0	109.0	75	125	0.4	20

Calcium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	113.0		85	115		
MB		<1							
PDS/PDSD	49353004		500	107.0	107.0	75	125	0.1	20
PDS/PDSD	49353007		500	99.6	101.0	75	125	0.4	20
DUP	49371004							3.7	20
DUP	49483009							1.7	20
PDS/PDSD	49596001		100	100.0	100.0	75	125	0.0	20
PDS/PDSD	49596004		100	101.0	101.0	75	125	0.5	20

Lithium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	111.0		85	115		
MB		<0.04							
MS/MSD	49483001		0.4	105.0	106.0	70	130	0.5	20

Antimony — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	104.0		80	120		

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Antimony — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MB		<0.001							
SPK	49354001		0.1	109.0		75	125		
SPK	49368001		0.1	112.0		75	125		
MS/MSD	49483001		0.4	106.0	106.0	70	130	0.2	20
SPK	49483001		0.1	115.0		75	125		
SPK	49501009		0.1	104.0		75	125		

Arsenic — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	102.0		80	120		
MB		<0.002							
SPK	49354001		0.1	108.0		75	125		
SPK	49368001		0.1	110.0		75	125		
MS/MSD	49483001		0.4	101.0	104.0	70	130	2.7	20
SPK	49483001		0.1	116.0		75	125		
SPK	49501009		0.1	107.0		75	125		

Barium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	101.0		80	120		
MB		<0.002							
SPK	49354001		0.1	106.0		75	125		
MS/MSD	49483001		0.4	98.5	99.5	70	130	0.9	20
SPK	49483001		0.1	117.0		75	125		
SPK	49501009		0.1	95.7		75	125		

Beryllium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	104.0		80	120		
MB		<0.0005							
SPK	49354001		0.1	97.2		75	125		
SPK	49368001		0.1	104.0		75	125		
MS/MSD	49483001		0.4	97.0	104.0	70	130	7.2	20
SPK	49483001		0.1	115.0		75	125		

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Beryllium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
SPK	49501009		0.1	112.0		75	125		

Cadmium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	107.0		80	120		
MB		<0.0005							
SPK	49354001		0.1	104.0		75	125		
SPK	49368001		0.1	112.0		75	125		
MS/MSD	49483001		0.4	109.0	96.4	70	130	12.4	20
SPK	49483001		0.1	108.0		75	125		
SPK	49501009		0.1	95.6		75	125		

Chromium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	101.0		80	120		
MB		<0.002							
SPK	49354001		0.1	105.0		75	125		
SPK	49368001		0.1	92.2		75	125		
MS/MSD	49483001		0.4	106.0	102.0	70	130	4.1	20
SPK	49483001		0.1	110.0		75	125		
SPK	49501009		0.1	105.0		75	125		

Cobalt — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	100.0		80	120		
MB		<0.002							
SPK	49354001		0.1	103.0		75	125		
SPK	49368001		0.1	102.0		75	125		
MS/MSD	49483001		0.4	104.0	98.2	70	130	5.7	20
SPK	49483001		0.1	107.0		75	125		
SPK	49501009		0.1	99.6		75	125		

Lead — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	98.4		80	120		
MB		<0.0005							

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Lead — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
SPK	49354001		0.1	93.8		75	125		
SPK	49368001		0.1	106.0		75	125		
MS/MSD	49483001		0.4	96.3	96.8	70	130	0.5	20
SPK	49483001		0.1	104.0		75	125		
SPK	49501009		0.1	96.0		75	125		

Molybdenum — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	104.0		80	120		
MB		<0.002							
SPK	49354001		0.1	119.0		75	125		
SPK	49368001		0.1	114.0		75	125		
MS/MSD	49483001		0.4	99.7	99.6	70	130	0.0	20
SPK	49483001		0.1	125.0		75	125		
SPK	49501009		0.1	101.0		75	125		

Selenium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	97.3		80	120		
MB		<0.005							
SPK	49354001		0.1	93.7		75	125		
SPK	49368001		0.1	111.0		75	125		
MS/MSD	49483001		0.4	96.8	103.0	70	130	6.0	20
SPK	49483001		0.1	102.0		75	125		
SPK	49501009		0.1	100.0		75	125		

Thallium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	99.4		80	120		
MB		<0.0005							
SPK	49354001		0.1	93.2		75	125		
SPK	49368001		0.1	104.0		75	125		
MS/MSD	49483001		0.4	96.8	96.7	70	130	0.0	20
SPK	49483001		0.1	102.0		75	125		

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Thallium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
SPK	49501009		0.1	97.6		75	125		

Mercury — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.002	94.8		85	115		
LFB			0.002	96.6		85	115		
LRB		<0.0002							
MB		<0.0002							
MS/MSD	48799007		0.002	95.1	101.0	70	130	5.1	20
MS/MSD	49596001		0.002	82.2	86.6	70	130	6.1	20
MS/MSD	49613001		0.002	96.0	89.4	70	130	5.4	20

Fluoride — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	106.0		83.99	111.11		
LFB-F			0.5	108.0		90	110		
LFB-F			0.5	104.0		90	110		
LFB-F			0.5	106.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD-F	49353004		0.5	104.0	102.0	80	120	1.5	20
MS/MSD-F	49483010		0.5	110.0	110.0	80	120	0.0	20

Total Dissolved Solids — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	102.0		90.35	110.33		
MB		<10							
DUP	49353001							0.9	20
DUP	49483010							0.6	20

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Basin Electric Power Coope
WO: 49483

Chain of Custody

Page 1 of 2

Work Order # Lab Use Only

Company Name and Address: Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account #: 2040	Phone #: 701-745-7238 701-557-5488	
	Contact: Mark Dihle	Emails: mdihle@bepc.com aknutson@bepc.com	
Billing Address (indicate if different from above)	Name of Sampler: mls	Ksolie@barr.com	
	Quote Number	Date Submitted: 5/23/2024	
	Project Name/Number: LOS-SP-143 LANDFILL CCR Wells	Purchase Order #: 790708-04	

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	5/21/2024	745	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MW-2016-12	GW	5/21/2024	1005	2	N	TDS, B, Ca, Cl, F, SO_4
003	MW-2016-3	GW	5/21/2024	1101	2	N	TDS, B, Ca, Cl, F, SO_4
004	MW-2016-6	GW	5/21/2024	1210	2	N	TDS, B, Ca, Cl, F, SO_4
005	MW-2016-9	GW	5/21/2024	1350	2	N	TDS, B, Ca, Cl, F, SO_4
006	MW-2016-11	GW	5/21/2024	1410	2	N	TDS, B, Ca, Cl, F, SO_4
007	MW-2016-8	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
008	Dup	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
009	MW-2016-10	GW	5/22/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

	Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.	Millennium Express	5-23-24		H Horst	23May24	1502	0.9°C	(Y)/N	TM920
2.								Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

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Member ACIL

Account #: 2040 **Client:** Basin Electric Power Cooperative

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Lab Use Only

Chain of Custody

Page 2 of 2

Work Order # (Lab Use Only)

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
	Name of Sampler mls	Ksolie@barr.com
Billing Address (indicate if different from above)	**Quote Number**	**Date Submitted** 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix (GW - Groundwater)	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
010	MW-2016-2	GW	5/22/2024	1050	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.			H Hause	23may24	1502	0.9°C	Y / N	Tm460
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

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Account #: 2040 **Client:** Basin Electric Power Cooperative
Workorder: LOS-SP-143 Landfill CCR Wells (49484) **PO:** 790708-04 LOS

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carroll

Claudette Carroll, Lab Manager Bismarck, ND

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

NEW ULM LAB CERTIFICATIONS:
MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS:
MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

Subcontracted Analyses

Analyzed By	Company	Address	Phone	Certification
SUBv	Energy Labs Casper	2393 Salt Creek Highway, Casper. WY 82601	307-235-0515	CERT

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 49484001 **Date Collected:** 05/21/2024 07:45 **Matrix:** Groundwater
Sample ID: MW-2016-13 **Date Received:** 05/23/2024 15:02 **Collector:** Client

Temp @ Receipt (C): 0.9 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: Contracted Result							
Radium 226	See Attached			1		06/21/2024 09:30	
Radium 228	See Attached			1		06/21/2024 09:30	

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ANALYTICAL SUMMARY REPORT

June 20, 2024

Minnesota Valley Testing Laboratories
1126 N Front St
New Ulm, MN 56073-1176

Work Order: C24050907 Quote ID: C15480
Project Name: 49484

Energy Laboratories, Inc. Casper WY received the following 1 sample for Minnesota Valley Testing Laboratories on 5/28/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C24050907-001	49484001, MW-2016-13	05/21/24 7:45	05/28/24	Groundwater	Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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LABORATORY ANALYTICAL REPORT
Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories
Project: 49484
Lab ID: C24050907-001
Client Sample ID: 49484001, MW-2016-13

Report Date: 06/20/24
Collection Date: 05/21/24 07:45
DateReceived: 05/28/24
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226	0.2	pCi/L	U			E903.0	06/12/24 15:52 / alb
Radium 226 precision (±)	0.2	pCi/L				E903.0	06/12/24 15:52 / alb
Radium 226 MDC	0.3	pCi/L				E903.0	06/12/24 15:52 / alb
Radium 228	0.9	pCi/L	U			RA-05	06/07/24 11:27 / kdk
Radium 228 precision (±)	0.7	pCi/L				RA-05	06/07/24 11:27 / kdk
Radium 228 MDC	1.1	pCi/L				RA-05	06/07/24 11:27 / kdk
Radium 226 + Radium 228	0.7	pCi/L	U			A7500-RA	06/13/24 14:13 / dmf
Radium 226 + Radium 228 precision (±)	0.7	pCi/L				A7500-RA	06/13/24 14:13 / dmf
Radium 226 + Radium 228 MDC	1.1	pCi/L				A7500-RA	06/13/24 14:13 / dmf

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories **Work Order:** C24050907 **Report Date:** 06/17/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-11325
Lab ID: LCS-RA226-11325	3	Laboratory Control Sample				Run: TENNELEC-4_240530C				06/12/24 11:57
Radium 226		11	pCi/L		107	70	130			
Radium 226 precision (±)		2.1	pCi/L							
Radium 226 MDC		0.17	pCi/L							
Lab ID: MB-RA226-11325	3	Method Blank				Run: TENNELEC-4_240530C				06/12/24 11:57
Radium 226		0.009	pCi/L							U
Radium 226 precision (±)		0.08	pCi/L							
Radium 226 MDC		0.1	pCi/L							
Lab ID: C24050880-034DDUP	3	Sample Duplicate				Run: TENNELEC-4_240530C				06/12/24 14:04
Radium 226		-0.10	pCi/L					330	30	UR
Radium 226 precision (±)		0.12	pCi/L							
Radium 226 MDC		0.22	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.82.

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit
ND - Not detected at the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories **Work Order:** C24050907 **Report Date:** 06/17/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **RA-05**										Batch: RA228-7402
Lab ID: **LCS-228-RA226-11325**	3	Laboratory Control Sample				Run: TENNELEC-4_240530B				06/07/24 11:27
Radium 228		6.3	pCi/L		102	70	130			
Radium 228 precision (±)		1.4	pCi/L							
Radium 228 MDC		0.87	pCi/L							
Lab ID: **MB-RA226-11325**	3	Method Blank				Run: TENNELEC-4_240530B				06/07/24 11:27
Radium 228		0.4	pCi/L							U
Radium 228 precision (±)		0.5	pCi/L							
Radium 228 MDC		0.8	pCi/L							
Lab ID: **C24050880-034DDUP**	3	Sample Duplicate				Run: TENNELEC-4_240530B				06/07/24 11:27
Radium 228		0.97	pCi/L					37	30	R
Radium 228 precision (±)		0.57	pCi/L							
Radium 228 MDC		0.85	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.37.

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit
ND - Not detected at the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Work Order Receipt Checklist

Minnesota Valley Testing Laboratories C24050907

Login completed by: Aaron J. Smith
Reviewed by: cindy
Reviewed Date: 6/1/2024
Date Received: 5/28/2024
Received by: DRS
Carrier name: UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	20.4°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

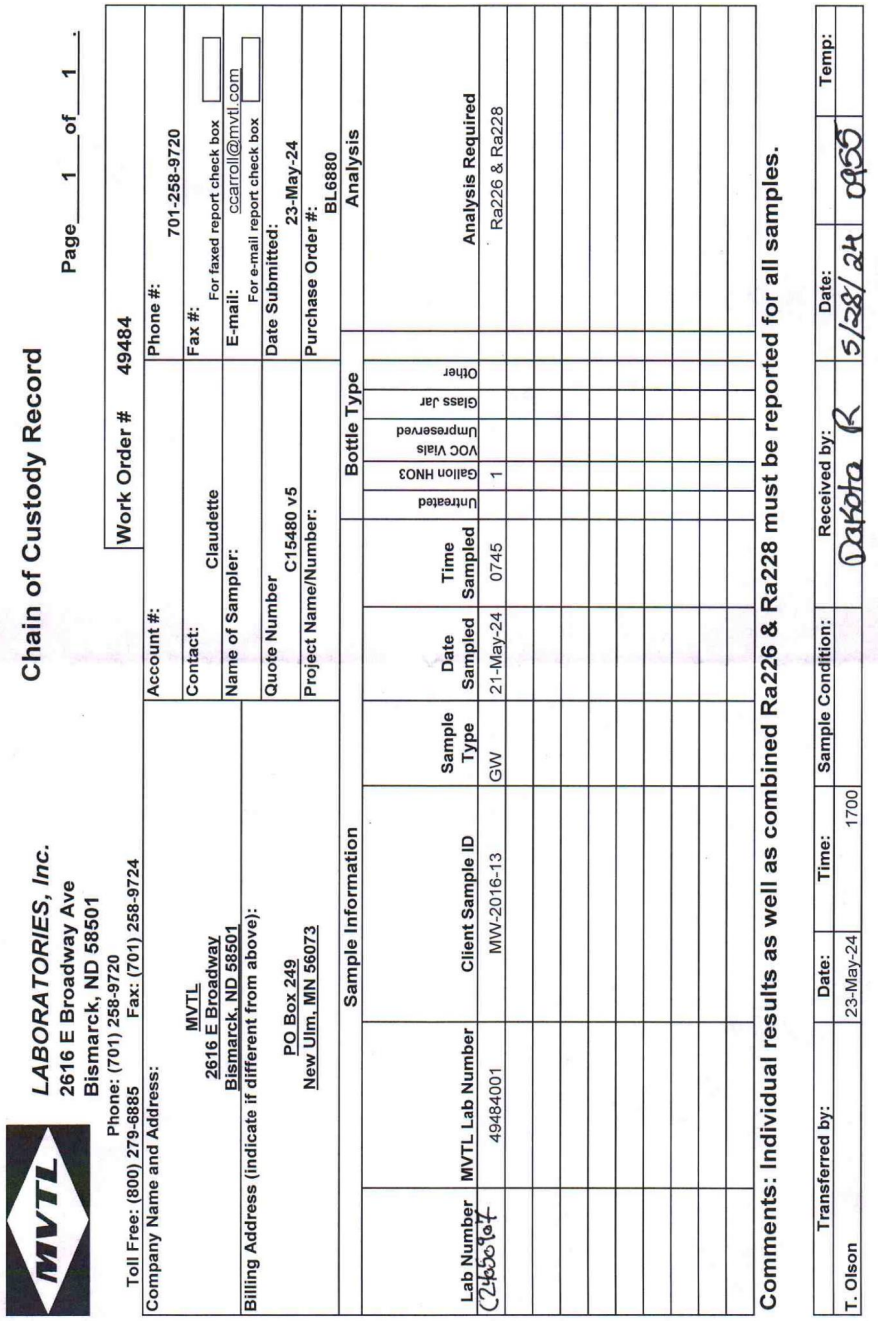
Contact and Corrective Action Comments:

The collection time indicated on the container label for the sample is 09:13 and on the Chain of Custody it is 07:45. Proceeded with the collection time as indicated on the Chain of Custody. AS 5/28/24

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

Member ACIL

Account #: 2040 **Client:** Basin Electric Power Cooperative



LABORATORIES, Inc.
2616 E Broadway Ave
Bismarck, ND 58501
Phone: (701) 258-9720
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Chain of Custody Record

Page 1 of 1

Work Order # 49484

Company Name and Address: MVTL 2616 E Broadway Bismarck, ND 58501

Billing Address (indicate if different from above): PO Box 249 New Ulm, MN 56073

Account #:
Contact: Claudette
Name of Sampler:
Quote Number C15480 v5
Project Name/Number:

Phone #: 701-258-9720
Fax #: For faxed report check box
E-mail: ccarroll@mvtl.com For e-mail report check box
Date Submitted: 23-May-24
Purchase Order #: BL6880

Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Bottle Type: Untreated	Gallon HNO3	VOC Vials Unpreserved	Glass Jar	Other	Analysis Required
(2465904)	49484001	MW-2016-13	GW	21-May-24	0745		1				Ra226 & Ra228

Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-May-24	1700		Dakota R	5/28/24 0935	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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Bismarck, ND 58501
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Basin Electric Power Coope
WO: 49484

Chain of Custody

Page 1 of 2

Work Order #
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account # 2040	Phone # 701-745-7238 701-557-5488
	Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
Billing Address (indicate if different from above)	Name of Sampler mls	Ksolie@barr.com
	Quote Number	Date Submitted 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	Purchase Order # 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	5/21/2024	745	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
—	MW-2016-12	GW	5/21/2024	1005	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-3	GW	5/21/2024	1101	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-6	GW	5/21/2024	1210	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-9	GW	5/21/2024	1350	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-11	GW	5/21/2024	1410	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-8	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
—	Dup	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-10	GW	5/22/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

	Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.	Millennium Express	5-23-24		M Hurst	23may24	1502	0.4°C	(X) N	TM420
2.								Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

MINNESOTA VALLEY TESTING LABORATORIES, INC.
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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.MVTL.com

Member ACIL

Account #: 2040 **Client:** Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc.
2616 East Broadway Avenue
Bismarck, ND 58501
Phone: (701) 258-9720
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Lab Use Only

Chain of Custody

Page 2 of 2

Work Order # Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
	Name of Sampler mls	Ksolie@barr.com
Billing Address (indicate if different from above)	**Quote Number**	**Date Submitted** 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
—	MW-2016-2	GW	5/22/2024	1050	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.			A Horse	23 May 24	1502	0.9°C	Ⓨ / N	Tm960
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

Well/Piezo ID: MW-2016-13

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: Calm 45°
Collector(s)
Date: 5-21-24
Time: Start 0745
Finish 0925

WATER LEVEL DATA: (measured from Top of Casing)

Well ☒ Piezometer ☐

a. Total Well Length 145.5
b. Water Table Depth 118.65
c. Casing Material PVC
d. Casing Diameter
e. Pump Settings 24/6 @ 125 psi
f. Calculated Well Volume (see back)

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L <0.5	Turbidity (NTU) <5	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
0821	INITIAL 6L	9.0	7.80	2433	-143.3	.14	3.30	clear	121.33
0824	6.5 L	9.0	7.81	2431	-139.9	.13	2.99		121.71
0827	7 L	9.0	7.81	2429	-138.2	.14	2.95		122.06
0830	7.5 L	9.0	7.81	2427	-137.1	.13	3.14		122.53
0834	8 L	9.0	7.81	2428	-132.5	.14	3.54		122.99
	L								
0903	25 L	9.3	7.78	2427	-130.2	.19	2.66		128.51
0906	25.5 L	9.4	7.80	2427	-129.9	.18	2.31		128.65
0909	26 L	9.4	7.80	2427	-128.9	.18	2.76		128.75
0912	26.5 L	9.4	7.79	2428	-124.5	.19	3.06	↓	128.95
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	0913
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	
	1 Gal	1		Radium	

Comments

Signature Myles Schultz Date 5-21-24

Well/Piezo ID: MW-2016-12

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: calm 55° Collector(s) mk

Date: 5-21-24
Time: Start 1005
Finish 1058

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length _____
b. Water Table Depth 72.21
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 24/6 @ 75 psi
f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	<0.5 +/- 10%	<5 +/- 10%		0.33 ft
1035	INITIAL 6L	9.7	7.92	2332	52.0	.08	4.49	Brown	75.01
1038	6.5 L	9.6	7.94	2335	52.0	.09	3.95		75.25
1041	7 L	9.6	7.94	2336	52.0	.07	4.34		75.40
1044	7.5 L	10.1	7.93	2333	52.3	.08	3.65		75.56
1048	8 L	10.1	7.93	2337	53.0	.08	2.49		75.80
1051	8.5 L	10.1	7.93	2336	53.8	.09	1.81	↓	76.04
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	1054
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments _____

Signature Myles Schaffle Date 5-21-24

Well/Piezo ID: MW-2016-3

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: calm 60° Collector(s) MW

Date: 5-21-24
Time: Start 1101
Finish 0800 — 5-22-24

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 126'
b. Water Table Depth 99.58
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 22/8 @ 125 psi
f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10% (<0.5)	+/- 10% (<5)		0.33 ft
1135	INITIAL 6L	9.7	7.97	2257	-73	.15	2.01	yellow	108.95
1139	6.5 L	9.6	7.98	2261	-64.6	.18	2.76		110.25
1143	7 L	9.7	7.98	2260	-66.1	.20	3.14		111.36
1147	7.5 L	9.7	7.98	2259	-60.3	.27	2.66		112.50
	L								
	10.5 L		pumped to 116' & STOP						
	L								
	L								
	L								
0738	L	8.9	8.10	2292	-20	.37	11		113.45 — 5-22-24
	L								
	L								
	L								
	L								117.39 — 5-22-24

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☐	☒	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	0750 — 5-22-24
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments

Signature Myles Sutcliffe Date 5-21-24

Well/Piezo ID: MW-2016-6

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: calm ~ 60°F Collector(s) MS

Date: 5-21-24
Time: Start 1210
Finish 0830 — 5-22-24

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 116.15
b. Water Table Depth 94.45
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 23/1 @ 125 psi
f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L (<0.5)	Turbidity (NTU) (<5)	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
1233	INITIAL 3.5 L	10.2	7.88	3000	-116	.11	2.98	yellow	100.91
1237	4 L	10.3	7.87	2987	-114	.13	3.06		101.75
1241	4.5 L	10.3	7.86	2981	-110.4	.20	5.31		103.01
1245	5 L	10.3	7.86	2989	-94.6	.60	4.23		104.44
	L								
	7.5 L	pumped to 106' + stop							
	L								
	L								
	L								
0815	L	9.4	7.93	3005	71.3	1.67	1.5		105.39 — 5-22-24
	L								
	L								
	L								
	L								107.55 — 5-22-24

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☐	☑	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	0827 on 5-22-24
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments

Signature Myles Schettle Date 5-22-24

Well/Piezo ID: MW-2016-9

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: SUNNY 105°F Collector(s) MK, MLS
Date: 5/21/24
Time: Start 1350
Finish 1405

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 107.25 d. Casing Diameter Big2 f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrosleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L <0.5	Turbidity (NTU) <5	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
1355	INITIAL	11.5	7.89	2592	35.5	1.81	11.7	CLEAR	107.25
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments _____

Signature Myles Schaffer Date 5-21-24

Well/Piezo ID: MW-2016-11

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: Sunny 65° Collector(s) MS

Date: 5/21/24
Time: Start 1410
Finish 1425

WATER LEVEL DATA: (measured from Top of Casing) Well ☒ Piezometer ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 116.36 d. Casing Diameter _____ f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrasleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
						<0.5	<5		
1415	INITIAL	12.0	7.95	2358	46.8	2.52	21.9	clear	116.36
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments _____

Signature Myles Schultz Date 5-21-24

Well/Piezo ID: MW-2016-8

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: calm 50°F Collector(s) AHS

Date: 5-22-24
Time: Start 0844
Finish 0941

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length _____
b. Water Table Depth 92.82
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 25/5 @ 90 psi
f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L <0.5	Turbidity (NTU) <5	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
0920	INITIAL 8 L	9.7	7.93	3383	51.3	.75	5.14	yellow	101.12
0923	8.5 L	9.7	7.93	3380	51.2	.77	4.53		101.35
0926	9 L	9.7	7.94	3381	51.6	.84	4.82	clear	101.64
0930	9.5 L	9.7	7.94	3380	52.3	.85	4.44	↓	101.91
0933	10 L	9.8	7.95	3375	52	.80	4.22	↓	102.23
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	0935
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments Dup.

Signature Myles Sibbett Date 5-22-24

Well/Piezo ID: MW-2016-10

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: 60° Calm Collector(s) MS

Date: 5.22.24
Time: Start 0944
Finish 1039

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length _____
b. Water Table Depth 111.73
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 23/1 @ 120 psi
f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L (<0.5)	Turbidity (NTU) (<5)	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
1012	INITIAL 6L	9.5	8.16	2540	-64.8	.14	2.04	yellow	113
1015	6.5 L	9.5	8.16	2538	-65.1	.14	2.10		113.04
1018	7 L	9.6	8.16	2536	-65.2	.16	2.14		113.06
1021	7.5 L	9.7	8.14	2537	-62.4	.14	2.47		113.07
1024	8 L	9.7	8.15	2535	-60.7	.15	2.29	↓	
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	1027
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments _____

Signature Myles Schuttler Date 5-22-24

Well/Piezo ID: MW-2016-2

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS LANDFILL
Weather Conds: 65° Calm Collector(s) MS

Date: 5-22-24
Time: Start 1050
Finish 1115

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 115.06 d. Casing Diameter _____ f. Calculated Well Volume (see back) _____

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrosleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L <0.5	Turbidity (NTU) <5	Color	DTW
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft
1100	INITIAL	14.1	8.06	2641	-6.6	3.21	40.5	clear sed.	115.06
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

_____

_____

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	1100
	~~250ML~~	~~1~~		~~ANIONS~~	
	500ML	1	HNO3	METALS	

Comments _____

Signature Myles Schaffner Date 5-22-24

Basin Electric North Dakota

Site Name: LOS LANDFILL CCR
Event Date: 5-20-24
Weather Conditions: CALM & SUNNY
Field Technician: mls

River Elevation (if applicable)
1657.78

Well ID	Time	Depth to Water*	Well Condition	Comments
MW - 2016 - 13	730	118.65	GOOD	
MW - 2016 - 12		72.21		
MW - 2016 - 3		99.58		
MW - 2016 - 6		94.45		
MW - 2016 - 9		107.25		
MW - 2016 - 11		116.36		
MW - 2016 - 8		92.82		
MW - 2016 - 10		111.73		
MW - 2016 - 2		115.06		

* Depth to water as measured from the top of PVC casing.

Calibration Log YSI						Hach
Date/Time		pH	ORP	Conductivity	DO	Verify
4-15-24	0710	✓	✓	✓	✓	✓
5-13-24	1010	✓	✓	✓	✓	✓
5-14-24	0730	✓	✓	✓	✓	✓
5-21-24	0715	✓	✓	✓	✓	✓
5-22-24	0648	✓	✓	✓	✓	✓
6-1-24	0800	✓	✓	✓	✓	✓
6-12-24	0830	✓	✓	✓	✓	✓
6-13-24	0820	✓	✓	✓	✓	✓
6-17-24	0815	✓	✓	✓	✓	✓
6-25-24	0730	✓	✓	✓	✓	✓
8-1-24	0715	✓	✓	✓	✓	✓
8-16-24	0720	✓	✓	✓	✓	✓
9-10-24	0700	✓	✓	✓	✓	✓
9-11-24	0700	✓	✓	✓	✓	✓
9-17-24	0705	✓	✓	✓	✓	✓
10-1-24	0703	✓	✓	✓	✓	✓
10-2-24	0701	✓	✓	✓	✓	✓

Account #: 2040 **Client:** Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc.
2616 East Broadway Avenue
Bismarck, ND 58501
Phone: (701) 258-9720
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Basin Electric Power Coope
WO: 49483

Chain of Custody

Page 1 of 2

Work Order # Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488	
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com	
Billing Address (indicate if different from above)	**Name of Sampler** mls	Ksolie@barr.com	
	Quote Number	**Date Submitted** 5/23/2024	
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04	

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	5/21/2024	745	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MW-2016-12	GW	5/21/2024	1005	2	N	TDS, B, Ca, Cl, F, SO_4
003	MW-2016-3	GW	5/21/2024	1101	2	N	TDS, B, Ca, Cl, F, SO_4
004	MW-2016-6	GW	5/21/2024	1210	2	N	TDS, B, Ca, Cl, F, SO_4
005	MW-2016-9	GW	5/21/2024	1350	2	N	TDS, B, Ca, Cl, F, SO_4
006	MW-2016-11	GW	5/21/2024	1410	2	N	TDS, B, Ca, Cl, F, SO_4
007	MW-2016-8	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
008	Dup	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
009	MW-2016-10	GW	5/22/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

	Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.	Millennium Express	5-23-24		H Herst	23May24	1502	0.9°C	(Y) / N	TM920
2.								Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

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

Member ACIL

Account #: 2040 **Client:** Basin Electric Power Cooperative

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Toll Free: (800) 279-6885 Fax: (701) 258-9724

Lab Use Only

Chain of Custody

Page 2 of 2

Work Order # (Lab Use Only)

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
	Name of Sampler mls	Ksolie@barr.com
Billing Address (indicate if different from above)	**Quote Number**	**Date Submitted** 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix (GW - Groundwater)	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
010	MW-2016-2	GW	5/22/2024	1050	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.			H Hause	23may24	1502	0.9°C	Y / N	Tm460
2.							Y / N	

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Basin Electric Power Coope
WO: 49484

Chain of Custody

Page 1 of 2

Work Order #
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account # 2040	Phone # 701-745-7238 701-557-5488
	Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
Billing Address (indicate if different from above)	Name of Sampler mls	Ksolie@barr.com
	Quote Number	Date Submitted 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	Purchase Order # 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	5/21/2024	745	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
—	MW-2016-12	GW	5/21/2024	1005	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-3	GW	5/21/2024	1101	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-6	GW	5/21/2024	1210	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-9	GW	5/21/2024	1350	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-11	GW	5/21/2024	1410	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-8	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
—	Dup	GW	5/22/2024	844	2	N	TDS, B, Ca, Cl, F, SO_4
—	MW-2016-10	GW	5/22/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

	Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.	Millennium Express	5-23-24		M Hurst	23may24	1502	0.4°C	(X) N	TM420
2.								Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

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Lab Use Only

Chain of Custody

Page 2 of 2

Work Order # Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
	Name of Sampler mls	Ksolie@barr.com
Billing Address (indicate if different from above)	**Quote Number**	**Date Submitted** 5/23/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
—	MW-2016-2	GW	5/22/2024	1050	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1.			A Horse	23 May 24	1502	0.9°C	Ⓨ / N	Tm960
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

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Account #: 2040 **Client:** Basin Electric Power Cooperative
Workorder: LOS-SP-143 Landfill CCR Wells (63484) **PO:** 790708-04

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carroll

Claudette Carroll, Lab Manager Bismarck, ND

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

NEW ULM LAB CERTIFICATIONS:
MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS:
MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484001 **Date Collected:** 09/10/2024 10:52 **Matrix:** Groundwater
Sample ID: MW-2016-13 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**13.3**	mg/L	5	1		09/18/2024 12:18	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1	09/19/2024 09:10	09/23/2024 09:30	
Method: EPA 6010D							
Boron	**0.27**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 08:58	
Calcium	**11.9**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:16	
Lithium	<0.02	mg/L	0.02	1	09/12/2024 15:55	09/18/2024 10:30	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	09/12/2024 15:55	09/16/2024 12:33	
Arsenic	**0.0025**	mg/L	0.002	5	09/12/2024 15:55	09/16/2024 12:33	
Barium	**0.0592**	mg/L	0.002	5	09/12/2024 15:55	09/16/2024 12:33	
Beryllium	<0.0005	mg/L	0.0005	5	09/12/2024 15:55	09/16/2024 12:33	
Cadmium	<0.0005	mg/L	0.0005	5	09/12/2024 15:55	09/16/2024 12:33	
Chromium	<0.002	mg/L	0.002	5	09/12/2024 15:55	09/16/2024 12:33	
Cobalt	<0.002	mg/L	0.002	5	09/12/2024 15:55	09/16/2024 12:33	
Lead	<0.0005	mg/L	0.0005	5	09/12/2024 15:55	09/16/2024 12:33	
Molybdenum	**0.0875**	mg/L	0.002	5	09/12/2024 15:55	09/16/2024 12:33	
Selenium	<0.005	mg/L	0.005	5	09/12/2024 15:55	09/16/2024 12:33	
Thallium	<0.0005	mg/L	0.0005	5	09/12/2024 15:55	09/16/2024 12:33	
Method: SM4500-Cl-E 2011							
Chloride	**57.5**	mg/L	2.0	1		09/17/2024 11:40	
Method: SM4500-F-C-2011							
Fluoride	**0.61**	mg/L	0.1	1		09/16/2024 14:37	
Method: USGS I-1750-85							
Total Dissolved Solids	**1580**	mg/L	10	1		09/13/2024 13:30	

Report Date: Tuesday, October 8, 2024 9:22:18 AM

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484002 **Date Collected:** 09/10/2024 09:08 **Matrix:** Groundwater
Sample ID: MW-2016-12 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**19.5**	mg/L	5	1		09/18/2024 12:19	
Method: EPA 6010D							
Boron	**0.23**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:00	
Calcium	**11.6**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:17	
Method: SM4500-Cl-E 2011							
Chloride	**46.7**	mg/L	2.0	1		09/17/2024 11:41	
Method: SM4500-F-C-2011							
Fluoride	**0.66**	mg/L	0.1	1		09/16/2024 14:43	
Method: USGS I-1750-85							
Total Dissolved Solids	**1520**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484003 **Date Collected:** 09/11/2024 08:30 **Matrix:** Groundwater
Sample ID: MW-2016-3 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**37.2**	mg/L	5	1		09/18/2024 12:20	
Method: EPA 6010D							
Boron	**0.22**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:01	
Calcium	**4.42**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:18	
Method: SM4500-Cl-E 2011							
Chloride	**36.7**	mg/L	2.0	1		09/17/2024 11:47	
Method: SM4500-F-C-2011							
Fluoride	**0.67**	mg/L	0.1	1		09/16/2024 14:49	
Method: USGS I-1750-85							
Total Dissolved Solids	**1480**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484004 **Date Collected:** 09/11/2024 08:56 **Matrix:** Groundwater
Sample ID: MW-2016-6 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**566**	mg/L	25	5		09/18/2024 12:11	
Method: EPA 6010D							
Boron	**0.24**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:01	
Calcium	**7.76**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:19	
Method: SM4500-Cl-E 2011							
Chloride	**8.2**	mg/L	2.0	1		09/17/2024 11:48	
Method: SM4500-F-C-2011							
Fluoride	**0.44**	mg/L	0.1	1		09/16/2024 14:55	
Method: USGS I-1750-85							
Total Dissolved Solids	**2060**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484005 **Date Collected:** 09/10/2024 13:55 **Matrix:** Groundwater
Sample ID: MW-2016-9 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**177**	mg/L	25	5		09/18/2024 12:12	
Method: EPA 6010D							
Boron	**0.23**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:02	
Calcium	**6.84**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:21	
Method: SM4500-Cl-E 2011							
Chloride	**19.6**	mg/L	2.0	1		09/17/2024 11:49	
Method: SM4500-F-C-2011							
Fluoride	**0.52**	mg/L	0.1	1		09/16/2024 15:01	
Method: USGS I-1750-85							
Total Dissolved Solids	**1710**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484006 **Date Collected:** 09/11/2024 07:33 **Matrix:** Groundwater
Sample ID: MW-2016-11 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**201**	mg/L	25	5		09/18/2024 12:13	
Method: EPA 6010D							
Boron	**0.26**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:03	
Calcium	**6.66**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:22	
Method: SM4500-Cl-E 2011							
Chloride	**22.1**	mg/L	2.0	1		09/17/2024 11:51	
Method: SM4500-F-C-2011							
Fluoride	**0.54**	mg/L	0.1	1		09/16/2024 15:07	
Method: USGS I-1750-85							
Total Dissolved Solids	**1640**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484007 **Date Collected:** 09/11/2024 10:06 **Matrix:** Groundwater
Sample ID: MW-2016-8 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**685**	mg/L	25	5		09/18/2024 15:07	
Method: EPA 6010D							
Boron	**0.22**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:03	
Calcium	**13.2**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:23	
Method: SM4500-Cl-E 2011							
Chloride	**9.8**	mg/L	2.0	1		09/17/2024 11:52	
Method: SM4500-F-C-2011							
Fluoride	**0.32**	mg/L	0.1	1		09/16/2024 15:13	
Method: USGS I-1750-85							
Total Dissolved Solids	**2310**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484008 **Date Collected:** 09/11/2024 10:06 **Matrix:** Groundwater
Sample ID: Dup **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**671**	mg/L	25	5		09/18/2024 15:08	
Method: EPA 6010D							
Boron	**0.22**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:06	
Calcium	**12.7**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:27	
Method: SM4500-Cl-E 2011							
Chloride	**9.8**	mg/L	2.0	1		09/17/2024 11:53	
Method: SM4500-F-C-2011							
Fluoride	**0.32**	mg/L	0.1	1		09/16/2024 15:19	
Method: USGS I-1750-85							
Total Dissolved Solids	**2330**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484009 **Date Collected:** 09/11/2024 10:51 **Matrix:** Groundwater
Sample ID: MW-2016-10 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**320**	mg/L	25	5		09/18/2024 15:10	
Method: EPA 6010D							
Boron	**0.21**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:08	
Calcium	**5.50**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:28	
Method: SM4500-Cl-E 2011							
Chloride	**15.4**	mg/L	2.0	1		09/17/2024 11:54	
Method: SM4500-F-C-2011							
Fluoride	**0.55**	mg/L	0.1	1		09/16/2024 16:08	
Method: USGS I-1750-85							
Total Dissolved Solids	**1690**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID: 63484010 **Date Collected:** 09/11/2024 07:53 **Matrix:** Groundwater
Sample ID: MW-2016-2 **Date Received:** 09/12/2024 14:36 **Collector:** Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	**242**	mg/L	25	5		09/18/2024 15:11	
Method: EPA 6010D							
Boron	**0.24**	mg/L	0.1	1	09/12/2024 15:55	09/18/2024 09:08	
Calcium	**9.87**	mg/L	1	1	09/12/2024 15:55	10/01/2024 11:29	
Method: SM4500-Cl-E 2011							
Chloride	**14.4**	mg/L	2.0	1		09/17/2024 11:55	
Method: SM4500-F-C-2011							
Fluoride	**0.49**	mg/L	0.1	1		09/16/2024 16:14	
Method: USGS I-1750-85							
Total Dissolved Solids	**1730**	mg/L	10	1		09/13/2024 13:30	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

QC Results Summary — WO #: 63484

Sulfate — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			100	96.7		85	115		
LFB			100	94.0		85	115		
LFB			100	88.7		85	115		
LFB			100	90.4		85	115		
LFB			100	100.0		85	115		
LFB			100	96.0		85	115		
LFB			100	99.0		85	115		
LFB			100	102.0		85	115		
LFB			100	98.9		85	115		
LFB			100	101.0		85	115		
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MS/MSD	63325009		4000	92.6	90.5	85	115	1.1	20
MS/MSD	63325018		10000	106.6	103.0	85	115	2.7	20
MS/MSD	63380008		500	91.6	99.8	85	115	5.8	20
MS/MSD	63484006		500	96.0	92.1	85	115	2.8	20
MS/MSD	63665006		100	74.1	72.5	85	115	1.0	20
MS/MSD	64155004		500	92.7	92.9	85	115	0.1	20
MS/MSD	64216009		2000	99.5	100.1	85	115	0.3	20
MS/MSD	64327004		500	83.4	94.8	85	115	5.5	20

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Sulfate Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	64327007		500	94.2	108.0	85	115	6.0	20

Chloride Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	92.7		90	110		
LFB			30	93.2		90	110		
LFB			30	93.3		90	110		
LFB			30	93.6		90	110		
LFB			30	94.1		90	110		
LFB			30	94.4		90	110		
LFB			30	95.3		90	110		
LFB			30	95.7		90	110		
LFB			30	94.2		90	110		
LFB			30	96.0		90	110		
LFB			30	95.0		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	63125004		30	96.4	95.6	80	120	0.9	20
MS/MSD	63129002		30	97.8	91.8	80	120	4.0	20
MS/MSD	63380005		30	108.1	109.0	80	120	0.7	20
MS/MSD	63665001		30	97.0	84.7	80	120	6.4	20
MS/MSD	63857001		30	94.9	92.7	80	120	1.9	20

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Boron — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	95.5		85	115		
MB		<0.1							
MS/MSD	63484001		0.4	94.1	92.6	75	125	0.9	20
MS/MSD	63484008		0.4	89.7	89.8	75	125	0.1	20

Calcium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	109.0		85	115		
MB		<1							
PDS/PDSD	63337002		500	117.0	117.0	75	125	0.0	20
DUP	63380011							3.0	20
PDS/PDSD	63476001		100	101.0	102.0	75	125	0.9	20
DUP	63484004							0.3	20
PDS/PDSD	63484009		500	103.0	103.0	75	125	0.0	20

Lithium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	106.0		85	115		
MB		<0.04							
MS/MSD	63484001		0.4	97.8	96.9	75	125	1.0	20

Antimony — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	103.0		80	120		
MB		<0.001							
SPK	63253001		0.1	99.5		75	125		
SPK	63373001		0.1	100.0		75	125		
MS/MSD	63484001		0.4	103.0	101.0	75	125	1.5	20

Arsenic — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	102.0		80	120		
MB		<0.002							
SPK	56103001		2	99.1		75	125		
SPK	61658001		2	102.0		75	125		
SPK	63253001		0.1	101.0		75	125		

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Arsenic				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
SPK	63373001		0.1	97.9		75	125		
MS/MSD	63484001		0.4	101.0	100.0	75	125	1.2	20
SPK	63771001		0.1	99.5		75	125		

Barium				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	102.0		80	120		
MB		<0.002							
SPK	63253001		0.1	96.1		75	125		
SPK	63373001		0.1	96.3		75	125		
MS/MSD	63484001		0.4	99.3	98.8	75	125	0.7	20

Beryllium				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	105.0		80	120		
MB		<0.0005							
SPK	63253001		0.1	98.2		75	125		
SPK	63373001		0.1	99.2		75	125		
MS/MSD	63484001		0.4	105.0	103.0	75	125	1.9	20

Cadmium				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	101.0		80	120		
MB		<0.0005							
SPK	63253001		0.1	91.8		75	125		
SPK	63373001		0.1	93.3		75	125		
MS/MSD	63484001		0.4	99.1	97.1	75	125	2.0	20
SPK	63771001		0.1	95.5		75	125		

Chromium				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	107.0		80	120		
MB		<0.002							
SPK	63253001		0.1	98.6		75	125		
SPK	63373001		0.1	96.4		75	125		
MS/MSD	63484001		0.4	101.0	99.4	75	125	2.0	20

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Cobalt — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0		80	120		
MB		<0.002							
SPK	63253001		0.1	96.9		75	125		
SPK	63373001		0.1	95.8		75	125		
MS/MSD	63484001		0.4	100.0	97.8	75	125	2.3	20

Lead — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0		80	120		
MB		<0.0005							
SPK	63253001		0.1	96.6		75	125		
SPK	63373001		0.1	98.7		75	125		
MS/MSD	63484001		0.4	103.0	101.0	75	125	1.7	20
SPK	63771001		0.1	102.0		75	125		

Molybdenum — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0		80	120		
MB		<0.002							
SPK	63253001		0.1	100.0		75	125		
SPK	63373001		0.1	96.2		75	125		
MS/MSD	63484001		0.4	95.0	93.5	75	125	1.5	20

Selenium — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	99.3		80	120		
MB		<0.005							
SPK	56103001		2	97.7		75	125		
SPK	61658001		2	96.7		75	125		
SPK	63253001		0.1	95.2		75	125		
SPK	63373001		0.1	91.9		75	125		
MS/MSD	63484001		0.4	98.4	96.8	75	125	1.8	20
SPK	63771001		0.1	96.0		75	125		

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Thallium Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	107.0		80	120		
MB		<0.0005							
SPK	63253001		0.1	96.1		75	125		
SPK	63373001		0.1	98.4		75	125		
MS/MSD	63484001		0.4	101.0	99.5	75	125	1.5	20

Mercury Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.002	95.8		85	115		
LFB			0.002	98.4		85	115		
LFB			0.002	90.4		85	115		
LRB		<0.0002							
MB		<0.0002							
MB		<0.0002							
MS/MSD	63279001		0.002	90.0	92.6	70	130	0.0	20
MS/MSD	63484001		0.002	86.9	90.2	70	130	5.7	20
MS/MSD	64216007		0.002	96.0	93.4	70	130	0.0	20
MS/MSD	64216015		0.002	96.0	98.1	70	130	5.1	20
MS/MSD	64342001		0.002	91.8	89.9	70	130	0.0	20

Fluoride Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	98.0		83.99	111.11		
LFB-F			0.5	98.0		90	110		
LFB-F			0.5	100.0		90	110		
LFB-F			0.5	100.0		90	110		
LFB-F			0.5	100.0		90	110		
LFB-F			0.5	100.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							

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Fluoride Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	63484005		0.5	104.0	104.0	80	120	0.0	20
MS/MSD	63665001		0.5	100.0	98.0	80	120	0.6	20
MS/MSD	63846001		0.5	98.0	98.0	80	120	0.0	20
MS/MSD	64137004		0.5	100.0	102.0	80	120	2.0	20

Total Dissolved Solids Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	104.0		90.35	110.33		
CRM			736	100.0		90.35	110.33		
MB		<10							
MB		<10							
DUP	63339001							0.8	20
DUP	63484008							3.1	20
DUP	63484010							0.6	20

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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Basin Electric Power Coop
WO: 63484

Chain of Custody

Page 1 of 2

Work Order # (Lab Use Only)

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account # 2040	Phone # 701-745-7238 701-557-5488
	Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
	Name of Sampler MK	Ksolie@barr.com
Billing Address (indicate if different from above)	Quote Number	Date Submitted 9/12/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	Purchase Order # 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix (GW - Groundwater)	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	9/10/2024	1052	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MW-2016-12	GW	9/10/2024	908	2	N	TDS, B, Ca, Cl, F, SO_4
003	MW-2016-3	GW	9/11/2024	830	2	N	TDS, B, Ca, Cl, F, SO_4
004	MW-2016-6	GW	9/11/2024	856	2	N	TDS, B, Ca, Cl, F, SO_4
005	MW-2016-9	GW	9/10/2024	1355	2	N	TDS, B, Ca, Cl, F, SO_4
006	MW-2016-11	GW	9/11/2024	733	2	N	TDS, B, Ca, Cl, F, SO_4
007	MW-2016-8	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
008	Dup	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
009	MW-2016-10	GW	9/11/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. Millenium Express	9/12/2024	NOON	C. Carroll	12Sep24	1436	5.5°C	Y / N	TM1951
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

Account #: 2040 **Client:** Basin Electric Power Cooperative

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Lab Use Only

Chain of Custody

Page 2 of 2

Work Order #
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account # 2040	Phone # 701-745-7238 701-557-5488	
	Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com	
Billing Address (indicate if different from above)	Name of Sampler MK	jermey.hurshman@aecom.com jason.lach@aecom.com	
	Quote Number	Date Submitted 9/12/2024	
	Project Name/Number LOS-SP-143 Landfill CCR Wells	Purchase Order # 790708-04	

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
010	MW-2016-2	GW	9/11/2024	753	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. Millenium Express	9/12/2024	NOON	C. [illegible]	12Sep24	1436	5.5C	(Y) N	TM959
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

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Account #: 2040 **Client:** Basin Electric Power Cooperative
Workorder: LOS-SP-143 Landfill CCR Wells (63485) **PO:** 790708-04 LOS

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

Claudette Carroll, Lab Manager Bismarck, ND

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

NEW ULM LAB CERTIFICATIONS:
MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS:
MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

Subcontracted Analyses

Analyzed By	Company	Address	Phone	Certification
SUBv	Energy Labs Casper	2393 Salt Creek Highway, Casper. WY 82601	307-235-0515	CERT

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Analytical Results

Lab ID:	63485001	**Date Collected:**	09/10/2024 10:52	**Matrix:**	Groundwater
Sample ID:	MW-2016-13	**Date Received:**	09/12/2024 14:36	**Collector:**	Client

Temp @ Receipt (C): 5.5 **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: Contracted Result							
Radium 226	See Attached			1		10/21/2024 15:29	
Radium 228	See Attached			1		10/21/2024 15:29	

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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ANALYTICAL SUMMARY REPORT

October 16, 2024

Minnesota Valley Testing Laboratories
1126 N Front St
New Ulm, MN 56073-1176

Work Order: C24090762 Quote ID: C15480
Project Name: 63485

Energy Laboratories, Inc. Casper WY received the following 1 sample for Minnesota Valley Testing Laboratories on 9/19/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C24090762-001	63485001, MW-2016-13	09/10/24 10:52	09/19/24	Groundwater	Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories
Project: 63485
Lab ID: C24090762-001
Client Sample ID: 63485001, MW-2016-13

Report Date: 10/16/24
Collection Date: 09/10/24 10:52
DateReceived: 09/19/24
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226	0.2	pCi/L				E903.0	10/08/24 12:50 / apt
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/08/24 12:50 / apt
Radium 226 MDC	0.2	pCi/L				E903.0	10/08/24 12:50 / apt
Radium 228	0.08	pCi/L	U			RA-05	10/01/24 14:11 / trs
Radium 228 precision (±)	0.6	pCi/L				RA-05	10/01/24 14:11 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/01/24 14:11 / trs
Radium 226 + Radium 228	0.7	pCi/L	U			A7500-RA	10/09/24 11:09 / dmf
Radium 226 + Radium 228 precision (±)	0.6	pCi/L				A7500-RA	10/09/24 11:09 / dmf
Radium 226 + Radium 228 MDC	1.1	pCi/L				A7500-RA	10/09/24 11:09 / dmf

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories **Work Order:** C24090762 **Report Date:** 10/09/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-11454
Lab ID: LCS-RA226-11454	3	Laboratory Control Sample				Run: TENNELEC-3_240925B			10/08/24	10:47
Radium 226		10	pCi/L		102	70	130			
Radium 226 precision (±)		2.0	pCi/L							
Radium 226 MDC		0.24	pCi/L							
Lab ID: MB-RA226-11454	3	Method Blank				Run: TENNELEC-3_240925B			10/08/24	10:47
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C24090764-004ADUP	3	Sample Duplicate				Run: TENNELEC-3_240925B			10/08/24	12:50
Radium 226		0.030	pCi/L					41	30	UR
Radium 226 precision (±)		0.12	pCi/L							
Radium 226 MDC		0.20	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.09.

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit
ND - Not detected at the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

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Account #: 2040 **Client:** Basin Electric Power Cooperative

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories **Work Order:** C24090762 **Report Date:** 10/09/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **RA-05**										Batch: RA228-7490
Lab ID: **LCS-228-RA226-11454**	3	Laboratory Control Sample				Run: TENNELEC-4_240925A			10/01/24 14:11	
Radium 228		9.0	pCi/L		89	70	130			
Radium 228 precision (±)		1.9	pCi/L							
Radium 228 MDC		1.1	pCi/L							
Lab ID: **MB-RA226-11454**	3	Method Blank				Run: TENNELEC-4_240925A			10/01/24 14:11	
Radium 228		0.4	pCi/L							U
Radium 228 precision (±)		0.7	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: **C24090764-004ADUP**	3	Sample Duplicate				Run: TENNELEC-4_240925A			10/01/24 14:11	
Radium 228		1.9	pCi/L					130	30	R
Radium 228 precision (±)		0.85	pCi/L							
Radium 228 MDC		1.1	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 1.36.

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit
ND - Not detected at the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Work Order Receipt Checklist

Minnesota Valley Testing Laboratories C24090762

Login completed by: Cristen C. Smith
Reviewed by: mstephens
Reviewed Date: 9/26/2024
Date Received: 9/19/2024
Received by: AJS
Carrier name: UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	16.7°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The temperature blank temperature in shipping container 1 was 16.7°C and shipping container 2 was 16.6°C. CCS 09/20/24

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Work Order Receipt Checklist - Continued

Minnesota Valley Testing Laboratories C24090762

The sample for radionuclides analysis was received at pH >2. Nitric acid (15 mL) was added to preserve to pH <2. In accordance with the method, these samples must held for 16 hours prior to analysis. CCS 09/20/24

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Account #: 2040 **Client:** Basin Electric Power Cooperative

Laboratory Certifications and Accreditations

Current certificates are available at www.energylab.com website:

	Agency	Number
Billings, MT	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

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Chain of Custody Record

Page 1 of 1

Work Order # 63485 C24090762

Company Name and Address: MVTL, 2616 E Broadway, Bismarck, ND 58501	**Account #:**	**Phone #:** 701-258-9720
	Contact: Claudette	**Fax #:** For faxed report check box ☐
	Name of Sampler:	**E-mail:** ccarroll@mvtl.com For e-mail report check box ☐
Billing Address (indicate if different from above): PO Box 249, New Ulm, MN 56073	**Quote Number** C15480 v5	**Date Submitted:** 16-Sep-24
	Project Name/Number:	**Purchase Order #:** BL6934

Sample Information						Bottle Type						Analysis
Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	Gallon HNO3	VOC Vials Unpreserved	Glass Jar	Other		Analysis Required
	63485001	MW-2016-13	GW	10-Sep-24	1052		1					Ra226 & Ra228

Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	16-Sep-24	1700		Aaron Smith	09.19.24 10:00	

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Basin Electric Power Coope
WO: 63485

Chain of Custody

Page 1 of 2

Work Order #
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
Billing Address (indicate if different from above)	**Name of Sampler** MK	Ksolie@barr.com
	Quote Number	**Date Submitted** 9/12/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	9/10/2024	1052	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
~~002~~	MW-2016-12	GW	9/10/2024	908	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-3	GW	9/11/2024	830	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-6	GW	9/11/2024	856	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-9	GW	9/10/2024	1355	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-11	GW	9/11/2024	733	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-8	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
–	Dup	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
–	MW-2016-10	GW	9/11/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. Millenium Express	9/12/2024	NOON	C. Carter	12Sep24	1430	5.5°C	Y / N	TM1959
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

Well/Piezo ID: MW-2016-12

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: SUNNY/HAZY
Collector(s): MK
Date: 9/10/24
Time: 0810
Finish 0915

WATER LEVEL DATA: (measured from Top of Casing) Well ☑

a. Total Well Length _____
b. Water Table Depth 72.51
c. Casing Material PVC
d. Casing Diameter _____
e. Pump Settings 26/4 @ 75PSI

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0858	INITIAL 9L	12.1	.52	2380	7.87	167.2	1.72	Brown	76.0
0901	9.5 L	12.3	.3	2372	7.87	166.2	1.8	↓	76.17
0904	10 L	12.3	.31	2379	7.87	165.1	1.83		76.21
0907	10.5 L	12.3	.36	2375	7.87	164.8	2.08		76.29
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

<0.5 <5

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0908
	500 ML	1	HNO3	METALS	↓

Comments _____

Signature Mariah Knutson Date 9/10/24

Well/Piezo ID: MW-2016-13

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Sunny/hazy 68° Collector(s) MK

Date: 9/10/24
Time: 0924
Finish 1109

WATER LEVEL DATA: (measured from Top of Casing) Well ☒

a. Total Well Length 145.5 c. Casing Material PVC e. Pump Settings 24/6 @ 125psi

b. Water Table Depth 122.33 d. Casing Diameter

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1039	INITIAL 1AL	11.8	.23	2467	7.74	-61.5	4.33	yellow	127.90
1042	14.5 L	11.9	.22	2470	7.74	-60.5	4.51		128.20
1045	15 L	12.0	.21	2482	7.75	-73.0	2.53		128.46
1048	1555 L	12.0	.23	2487	7.76	-79.9	2.37		128.75
1051	16 L	12.0	.23	2495	7.76	-87.6	2.19	↓	128.95
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1052
	500 ML	1	HNO3	METALS	↓
	1 gal	1	HNO3	Radium	↓

Comments

Signature Mariah Knutson Date 9/10/24

Well/Piezo ID: MW-2016-3

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Sunny/Hazy Breezy 73°
Date: 9/10/24
Time: 1119
Finish: 0842 9/11/24
Collector(s)

WATER LEVEL DATA: (measured from Top of Casing) Well ☒

a. Total Well Length 126
b. Water Table Depth 100.3
c. Casing Material PVC
d. Casing Diameter
e. Pump Settings 23/7 @ 125 psi

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1152	INITIAL 6L	11.0	0.17	2296	7.95	-117.4	1.81	Brown	109.83
1155	6.5 L	11.0	0.17	2300	7.95	-116.2	2.57	↓	111.11
1158	7 L	11.1	0.17	2282	7.95	-105.2	1.87		111.94
1201	7.5 L	11.1	0.2	2291	7.95	-99.0	2.27	↓	112.71
	10 L	pumped to 11 left 1			stopped				
	L								
0830	L	10.0	4.21	2278	8.09	91.0	2.35	Brown/red	115
	L								
	L								
	L								
	L								
	L								
	L								
	L								

9/11/24

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☐	☒	☐

If no or N/A - Explain below.
DTW

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0830
	500 ML	1	HNO3	METALS	↓

9/11/24

Comments

Signature Manah Knutson Date 9/11/24

Well/Piezo ID: MW-2016-6

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Sunny / Hazy Breezy 78°
Date: 9/10/24
Time: 1301
Finish 1343
Collector(s) MK 0904 9/11/24

WATER LEVEL DATA: (measured from Top of Casing) Well ☒

a. Total Well Length 116.15
b. Water Table Depth 95.5
c. Casing Material PVC
d. Casing Diameter [redacted]
e. Pump Settings 23/7 @125psi

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
			<5			<0.5	<5		
1319	INITIAL 3L	10.8	0.18	3027	7.85	-56.7	5.59	yellow	101.1
1322	3.74 L	10.8	0.13	3001	7.85	-44.5	8.76	↓	102.34
1325	4.5 L	10.7	0.23	3021	7.83	-33.8	5.20		103.12
1328	5.25 L	10.7	0.04	3010	7.85	-22.2	5.19	↓	104.14
1337	7.5 L		pumped TO 10W' & Stopped						
	L								
0850	L	10.0	4.33	2980	7.9	6.18	5.73	yellow	106.21
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☐	☒	☐

If no or N/A - Explain below.

DTW

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0850
	500 ML	1	HNO3	METALS	↓

Comments

Signature Mariah Knutson Date 9/11/24

Well/Piezo ID: MW-2016-9

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Sunny Breezy Hazy 78°
Date: 9/10/24
Time: 1350
Finish 1410
Collector(s) MK

WATER LEVEL DATA: (measured from Top of Casing) Well ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 107.90 d. Casing Diameter Big2

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrasleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1355	INITIAL	10.7	5.55	21636	7.86	60.8	10.5	clear	107.90
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

<0.5 <5

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1355
	500 ML	1	HNO3	METALS	↓

Comments

Signature Munah Knutson Date 9/10/24

Well/Piezo ID: MW-2016-11

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: cloudy calm 58° Collector(s) MK

Date: 9/11/24
Time: 0712
Finish 0747

WATER LEVEL DATA: (measured from Top of Casing) Well ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 118.19 d. Casing Diameter 2"

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ HydroSleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0733	INITIAL	11.3	5.98	1295	7.99	117.5	1000	yellow	118.19
	L						25.6		
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

<0.5 <5

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☑
Has required turbidity been reached	☐	☐	☑
Have parameters stabilized	☐	☐	☑

If no or N/A - Explain below.

_____

_____

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0733
	500 ML	1	HNO3	METALS	"

Comments _____

Signature Mariah Knutson Date 9/11/24

Well/Piezo ID: MW-2016-2

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: cloudy, calm 60° Collector(s) MR

Date: 9/11/24
Time: 0750
Finish 0810

WATER LEVEL DATA: (measured from Top of Casing) Well ☐

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings _____

b. Water Table Depth 115.65 d. Casing Diameter 1L

WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrosleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0753	INITIAL	10.4	3.99	1337	7.96	-30.9	50.4	clear/ sed.	115.65
	L								
	L								
	L								
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	L								
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	L								
	L								
	L								
	L								
	L								
	L								

<0.5 <5

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0753
	500 ML	1	HNO3	METALS	"

Comments

Signature Mariah Knutson Date 9/11/24

Well/Piezo ID: MW-2016-8

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Breezy, cloudy 60° Collector(s) MK

Date: 9/11/24
Time: 0911
Finish 1016

WATER LEVEL DATA: (measured from Top of Casing) Well ☑

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings 25/5 @ 90psi

b. Water Table Depth 93.35 d. Casing Diameter _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
							<0.5	<5	
0956	INITIAL 7.5	10.3	0.39	3345	7.84	101.5	4.26	clear	100.75
0959	8 L	10.3	0.39	3341	7.84	101.3	4.07	↓	100.96
1002	8.5 L	10.3	0.40	3341	7.84	100.9	4.77		101.16
1005	9 L	10.3	0.41	3340	7.85	100.1	4.96	↓	101.45
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1006
	500 ML	1	HNO3	METALS	↓

Comments DUP.

Signature Mariah Knutson Date 9/11/24

Well/Piezo ID: MW-2016-10

Ground Water Sample Collection Record

Client: BEPC
Project No:
Site Location: LOS PONDS
Weather Conds: Hazy, Breezy, 104° Collector(s) MK

Date: 9/11/24
Time: 1023
Finish 1104

WATER LEVEL DATA: (measured from Top of Casing) Well ☒

a. Total Well Length _____ c. Casing Material PVC e. Pump Settings 23/7 @ 120psi

b. Water Table Depth 112.02 d. Casing Diameter _____

WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		22C103901
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
							<0.5	<5	
1041	INITIAL 4L	9.5	0.34	2525	8.11	-58.9	1.85	clear	112.95
1044	4.5 L	9.5	0.26	2522	8.10	-57.6	1.97	"	113.15
1047	5 L	9.5	0.21	2519	8.09	-55.1	2.32	"	113.22
1050	5.5 L	9.5	0.19	2517	8.09	-52.0	2.91	↓	113.30
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1051
	500 ML	1	HNO3	METALS	↓

Comments

Signature Manan Knutson Date 9/11/24

Basin Electric North Dakota

Site Name:	LOS-SP-143 Landfill
Event Date:	9/9/2024
Weather Conditions:	Sunny/ Hazy/ Breezy
Field Technician:	MK

River Elevation (if applicable)
1658.94

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-2016-12	745	72.51	GOOD	
MW-2016-13		122.33		
MW-2016-3		100.3		
MW-2016-6		95.5		
MW-2016-9		107.9		
MW-2016-11		118.19		
MW-2016-2		115.65		
MW-2016-8		93.35		
MW-2016-10		112.02		

* Depth to water as measured from the top of PVC casing.

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

Member ACIL

Account #: 2040 **Client:** Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc.
2616 East Broadway Avenue
Bismarck, ND 58501
Phone: (701) 258-9720
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Basin Electric Power Coop
WO: 63484

Chain of Custody

Page 1 of 2

Work Order # (Lab Use Only)

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	Account # 2040	Phone # 701-745-7238 701-557-5488
	Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
	Name of Sampler MK	Ksolie@barr.com
Billing Address (indicate if different from above)	Quote Number	Date Submitted 9/12/2024
	Project Name/Number LOS-SP-143 LANDFILL CCR Wells	Purchase Order # 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix (GW - Groundwater)	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
001	MW-2016-13	GW	9/10/2024	1052	3	N	B, Ca, Cl, F, SO_4, Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MW-2016-12	GW	9/10/2024	908	2	N	TDS, B, Ca, Cl, F, SO_4
003	MW-2016-3	GW	9/11/2024	830	2	N	TDS, B, Ca, Cl, F, SO_4
004	MW-2016-6	GW	9/11/2024	856	2	N	TDS, B, Ca, Cl, F, SO_4
005	MW-2016-9	GW	9/10/2024	1355	2	N	TDS, B, Ca, Cl, F, SO_4
006	MW-2016-11	GW	9/11/2024	733	2	N	TDS, B, Ca, Cl, F, SO_4
007	MW-2016-8	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
008	Dup	GW	9/11/2024	1006	2	N	TDS, B, Ca, Cl, F, SO_4
009	MW-2016-10	GW	9/11/2024	1051	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. Millenium Express	9/12/2024	NOON	C. Carroll	12Sep24	1436	5.5°C	Y / N	TM1951
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

Account #: 2040 **Client:** Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc.
2616 East Broadway Avenue
Bismarck, ND 58501
Phone: (701) 258-9720
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Lab Use Only

Chain of Custody

Page 2 of 2

Work Order #
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571	**Account #** 2040	**Phone #** 701-745-7238 701-557-5488
	Contact Mark Dihle	**Emails** mdihle@bepc.com aknutson@bepc.com
Billing Address (indicate if different from above)	**Name of Sampler** MK	jermey.hurshman@aecom.com jason.lach@aecom.com
	Quote Number	**Date Submitted** 9/12/2024
	Project Name/Number LOS-SP-143 Landfill CCR Wells	**Purchase Order #** 790708-04

Lab Use Only Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	Y/N	Analysis Required
010	MW-2016-2	GW	9/11/2024	753	2	N	TDS, B, Ca, Cl, F, SO_4

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. Millenium Express	9/12/2024	NOON	C. [illegible]	12Sep24	1436	5.5C	(Y) / N	TM959
2.							Y / N	

Please submit the top copy with your samples. We will return the completed original with your results.

Appendix B Alternative Source Demonstration Spring 2024

Technical Memorandum

To: Mark Dihle, Basin Electric Power Cooperative
From: Barr Engineering Co.
Subject: Alternative Source Demonstration (ASD), Leland Olds Station CCR Landfill (Spring 2024)
Date: November 27, 2024
Project: 34291141.00

1 Introduction

Basin Electric Power Cooperative (Basin Electric) owns and operates Leland Olds Station (LOS), comprised of a coal-fired generating station, located southeast of Stanton, Mercer County, North Dakota (Figure 1). Unit 1 coal-based operations began in 1966 and Unit 2 operations began in 1975. Coal combustion residuals (CCRs) produced at LOS are managed within part of the Glenharold Mine Landfill (Landfill or Site), located approximately three miles southwest of the generating units and office complex. The landfill was permitted by the North Dakota Department of Environmental Quality (NDDEQ) and began accepting CCR in 1992. The most recent Permit 0143 issued by NDDEQ will expire on June 28, 2027, and the most recent cell (with CCR compliant liner) was constructed in 2023.

The CCRs including fly ash, bottom ash, and flue gas desulfurization (FGD) waste are managed at the Site along with other minor wastes accepted as per our NDDEQ permit. The CCR unit 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) and the NDDEQ CCR Rule (NDAC Title 33.1, Article 20, Chapter 8).

Basin Electric has implemented a Detection Monitoring Program in accordance with the U.S. Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261) for the Site. As part of the Detection Monitoring Program, statistically significant increases (SSIs) in monitored groundwater quality parameters over background were identified at the Site for the following monitoring wells during semi-annual detection monitoring completed in the spring of 2024 on May 21, 2024:

- MW-2016-12 – Chloride
- MW-2016-13 – Chloride

The CCR Rule (US EPA, 2015) § 257.94(e)(2) allows for an alternative source demonstration (ASD) in the event of an identified statistically significant increase (SSI) in a water quality parameter in a downgradient monitoring well over background levels:

> *The owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report.*

The purpose of this work is to evaluate the data collected as part of the May 2024 monitoring event, along with historical data, to demonstrate if the SSIs are the results of a "source other than the CCR unit" or due to natural variation in groundwater quality or an error in sampling, analysis, or statistical evaluation. Nothing in the foregoing citation of the rule requires that the owner/operator disprove any and all potential counterarguments that EPA or others may offer to refute this demonstration. Such arguments if valid, would need to follow requirements of the rule to show a basis in fact that includes rule requirements that are based on site-specific information, and must be certified by a North Dakota licensed professional engineer. This memorandum provides a science-based reason for the data results that indicate a source other than the CCR unit.

This memorandum provides written documentation of an Alternative Source Demonstration (ASD) and certification of accuracy as described in the CCR Rule (§ 257.94(e)(2)).

1.1 Background Information

Figure 1 shows the site location and Figure 2 provides well locations. A groundwater contour map showing groundwater elevations in the lignite, which represent the uppermost aquifer in the vicinity of the CCR landfill, is presented on Figure 3, using measurements from May 2024. Groundwater generally flows from south to north.

In 2022, two new landfill expansion wells, MW-2016-12 and MW-2016-13, were installed at the Site. Baseline sampling was initiated in 2023. Eight samples were collected at MW-2016-12 and four samples were collected at MW-2016-13 prior to the May 2024 sampling event. May 2024 is the first detection monitoring event where MW-2016-12 and MW-2016-13 have been evaluated for SSIs.

A comparison of the detection monitoring groundwater results with the prediction limits calculated using the 2016-2023 background assessment data from upgradient wells MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8 are included in Table 1. Concentrations for Appendix III parameters observed in May 2024 are shown on time series graphs in Attachment A. Chloride concentrations at MW-2016-12 and MW-2016-13 are consistent with those observed during baseline monitoring events.

Table 1 SSIs Compared to Prediction Limits

Event	Well	Parameter (units)	Measured	Interwell Prediction Limit
Detection Monitoring – 2024 #1 (Spring)	MW-2016-12	Chloride (mg/L)	44.2	41
	MW-2016-13	Chloride (mg/L)	55.3	41

1.2 Rule Requirements

The requirements for written documentation and certification of accuracy for an ASD are included in §257.95(g) (3):

> *Within 90 days of finding that any of the constituents listed in appendix IV to this part have been detected at a statistically significant level exceeding the groundwater protection standards the owner or operator must… Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such*

> *demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the constituents in Appendix III and Appendix IV of this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by §257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority.*

In accordance with the above requirement, this memorandum is being issued within 90 days of the SSI determination (August 30, 2024) following the review and analysis of the results provided in the final laboratory report which was received on June 21, 2024.

2 Potential Alternative Sources Review

The CCR Rule provides five potential alternative source categories:

1. A source other than the CCR unit
2. Sampling (or sampling equipment) methods
3. Laboratory methods
4. Statistical methods
5. Natural variation in groundwater quality

Site data were evaluated to identify potential causes for chloride concentrations exceeding interwell prediction limits in monitoring wells MW-2016-12 and MW-2016-13. Chloride is naturally occurring and may not necessarily be the result of a release from a CCR unit; therefore, natural variation in groundwater quality was further investigated as part of the ASD.

2.1 Lack of Waste to Serve as Source of Release

Monitoring location MW-2016-13 was added to the monitoring network in anticipation of expanding the landfill; however, no CCRs have yet been placed upgradient of this location. There is no pathway that would allow a release to migrate to this well location; therefore, the elevated chloride cannot be from the CCR unit. However, because effects from a release might be expected at other downgradient wells closer to the portion of the CCR unit than at MW-2016-13, additional analysis has been conducted based on the potentiometric surface map (Figure 3).

MW-2016-12 is located about 600 feet downgradient from a portion of the CCR unit along the shortest flow path based on the potentiometric surface map. The average seepage velocity calculated for the Landfill in the 2023 Annual Groundwater Monitoring and Corrective Action Report (AGMCAR; AECOM, 2024) is 0.19 ft/year. At 0.19 ft/year, it would take more than 3,100 years for a release to reach MW-2016-12. Accounting for the time elapsed since CCR placement in the Landfill beginning in 1992 and allowing for an order of magnitude increase in velocity to address potential preferential pathways, a release would not be expected to reach the well for over 300 years at the earliest. Therefore, the elevated chloride at MW-2016-12 cannot be from the CCR unit.

The lack of ash in the landfill expansion and the long time of travel supports the hypothesis that the CCR unit is not the source of the chloride observed at MW-2016-12 and MW-2016-13.

2.2 CCR Unit Release Scenario

To accept the hypothesis that a release of leachate from the CCR unit is the source of the SSI, it would be assumed that groundwater chemistry at one or more potentially impacted wells (MW-2016-12 and/or MW-2016-13) would be geochemically similar to impacted water from the CCR unit represented by leach testing results. However, if these liquids are geochemically dissimilar, this indicates that a source "other than the CCR unit" may be responsible for the SSI. Therefore, major ion chemistry from the CCR groundwater monitoring locations (upgradient and downgradient) was compared to CCR Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312 modified to a 4:1 solution to solids ratio) data collected in December 2009 and January 2010 (Attachment B). Two ash samples were collected from the LOS Units 1 and 2 at the point of ash production (one sample for each unit). Because the source of the coal and the boiler conditions have been similar to past operations, the ash samples are representative of the material disposed in the Landfill. Although chlorides are highly soluble, the samples were collected from unexposed ash, which has not been exposed to precipitation. It is, therefore, not plausible that the chlorides would have previously leached out of the samples prior to collection.

The SPLP results indicate that chloride is a relatively minor component of the ash leachate, accounting for less than 1% of total dissolved solids (TDS) by mass. In contrast, the chloride concentration in the groundwater sample from MW-2016-12 and MW-2016-13 accounted for over 2-3% of TDS and was measured at a level higher than those in the ash SPLP leachates. This finding is opposite what one would expect if impacted water from the CCR unit were being released and impacting groundwater because dilution and dispersion would tend to reduce the release concentrations between the CCR unit and the downgradient wells.

Site specific chloride values are variable at the site and range from 7.5 to 24.2 mg/L at downgradient wells other than MW-2016-12 and MW-2016-13 (MW-2016-2, MW-2016-9, MW-2016-10, and MW-2016-11) from 2016 to 2024. Chloride at upgradient[1] wells (MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8) ranged from 4.7 to 41 mg/L as shown on time series graphs in Attachment A.

Further evaluation of sulfate concentrations, which are often viewed as a principal indicator of a CCR unit release to groundwater, demonstrate that MW-2016-12 and MW-2016-13 are not impacted by a release from the CCR landfill. Sulfate concentrations during the May 2024 sampling event at these locations were 16.8 mg/L and 12.9 mg/L at MW-2016-12 and MW-2016-13, respectively. The sulfate concentrations at the upgradient Landfill monitoring locations (MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8) ranged from 31.6 to 910 mg/L between 2016 and 2024. Sulfate at MW-2016-12 and MW-2016-13 is lower than upgradient monitoring locations.

Likewise, total dissolved solids (TDS) concentrations during the May 2024 sampling event were 1530 and 1600 mg/L at MW-2016-12 and MW-2016-13, respectively. TDS at the upgradient[1] monitoring locations

[1] MW-2016-3 was an upgradient background well through 2023, but it is now considered a downgradient well due to the anticipated landfill expansion. Only data through 2023 was considered for the upgradient constituent ranges for this location. MW-2016-4 and MW-2016-5 were abandoned in Fall 2022, but background data from these locations were used to establish interwell prediction limits and are used to interpret upgradient constituent ranges.

(MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8) ranged from 1400 to 2330 mg/L between 2016 and 2024. TDS concentrations are variable at upgradient wells, and the TDS concentrations at MW-2016-12 and MW-2016-13 fall at the low end of the observed range in upgradient wells, suggesting there are no impacts from the CCR Unit at MW-2016-12 and MW-2016-13.

Although MW-2016-12 and MW-2016-13 have elevated chloride concentrations compared to upgradient wells, sulfate and TDS concentrations are lower or on the low end of the range of concentrations compared to the rest of the monitoring locations. The relatively low sulfate and TDS concentrations at MW-2016-12 and MW-2016-13 suggest that the chloride is unlikely to come from a CCR unit release because groundwater impacted by a release should have elevated concentrations of multiple Appendix III parameters. **Therefore, because there is more mass of chloride in the aquifer than in the ash itself and other indicators of the CCR unit are absent, we reject the hypothesis that the CCR unit is the source of the chloride observed at MW-2016-12 and MW-2016-13.**

2.3 Statistical Methods

Interwell prediction limits are currently used to evaluate for SSIs. Interwell prediction limits are valid for the site because they are based on the background data from upgradient monitoring wells MW-2016-3[2], MW-2016-4[3], MW-2016-5[3], MW-2016-6, and MW-2016-8 (USEPA, 2009). The upgradient monitoring wells are not directly downgradient of a CCR unit (Figure 3). According to the EPA Unified Guidance (USEPA, 2009; page 6-31), interwell tests alone may not be suitable for sites with non-stationarity of distribution mean and variance. Non-stationarity may be expected due to historical mining activities and due to heterogeneity within the lignite documented at the Site. Therefore, intrawell limits are also valid per the guidance. The statistical methods used are intended to verify that there is no evidence of a previous release from the CCR Unit which may mask a release using intrawell methods. This conclusion is verified during each event by trend testing.

Using intrawell prediction limit methods, there is no SSI for chloride at MW-2016-12 (Attachment C). To date, there is not enough data for an intrawell evaluation at MW-2016-13 because the minimum number of eight samples has not been collected. Using a combination of interwell and intrawell methods at the site would account for site specific heterogeneity and historical conditions and would eliminate the SSI determination at MW-2016-12. Once enough baseline samples are collected at MW-2016-13, intrawell methods may also be used.

3 Conclusion

An alternative source demonstration for chloride at this site is supported by the following lines of evidence:

- No CCRs have been placed in the landfill expansion area. Based on groundwater flow and seepage velocities, the elevated chloride concentrations could not have come from the CCR unit.
- The ash SPLP data has low chloride and high sulfate and TDS content. The opposite is true at MW-2016-12 and MW-2016-13; while there are somewhat elevated concentrations of chloride,

[2] MW-2016-3 was an upgradient background well through 2023, but it is now considered a downgradient well due to the anticipated landfill expansion.
[3] MW-2016-4 and MW-2016-5 were abandoned in Fall 2022, but background data from these locations were used to establish interwell prediction limits.

there are low sulfate and TDS concentrations. Only this single detection monitoring parameter indicated an SSI for two of the seven downgradient monitoring wells. There is a relative absence of sulfate, a primary indicator of a release, in the groundwater as compared to the presence of sulfate in the water within the upgradient monitoring wells.

- Intrawell statistical methods did not result in an SSI for chloride at MW-2016-12. There are not enough baseline samples at MW-2016-13 for intrawell analyses.

As this report demonstrates, the SSI analysis presented in Table 1 for monitoring wells MW-2016-12 and MW-2016-13 is attributed to a source other than the CCR Unit for chloride in the groundwater.

4 References

AECOM, 2024. 2023 Annual Groundwater Monitoring and Corrective Action Report, LOS CCR Landfill. January 2024.

United States Environmental Protection Agency (USEPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. March 2009

5 Certification

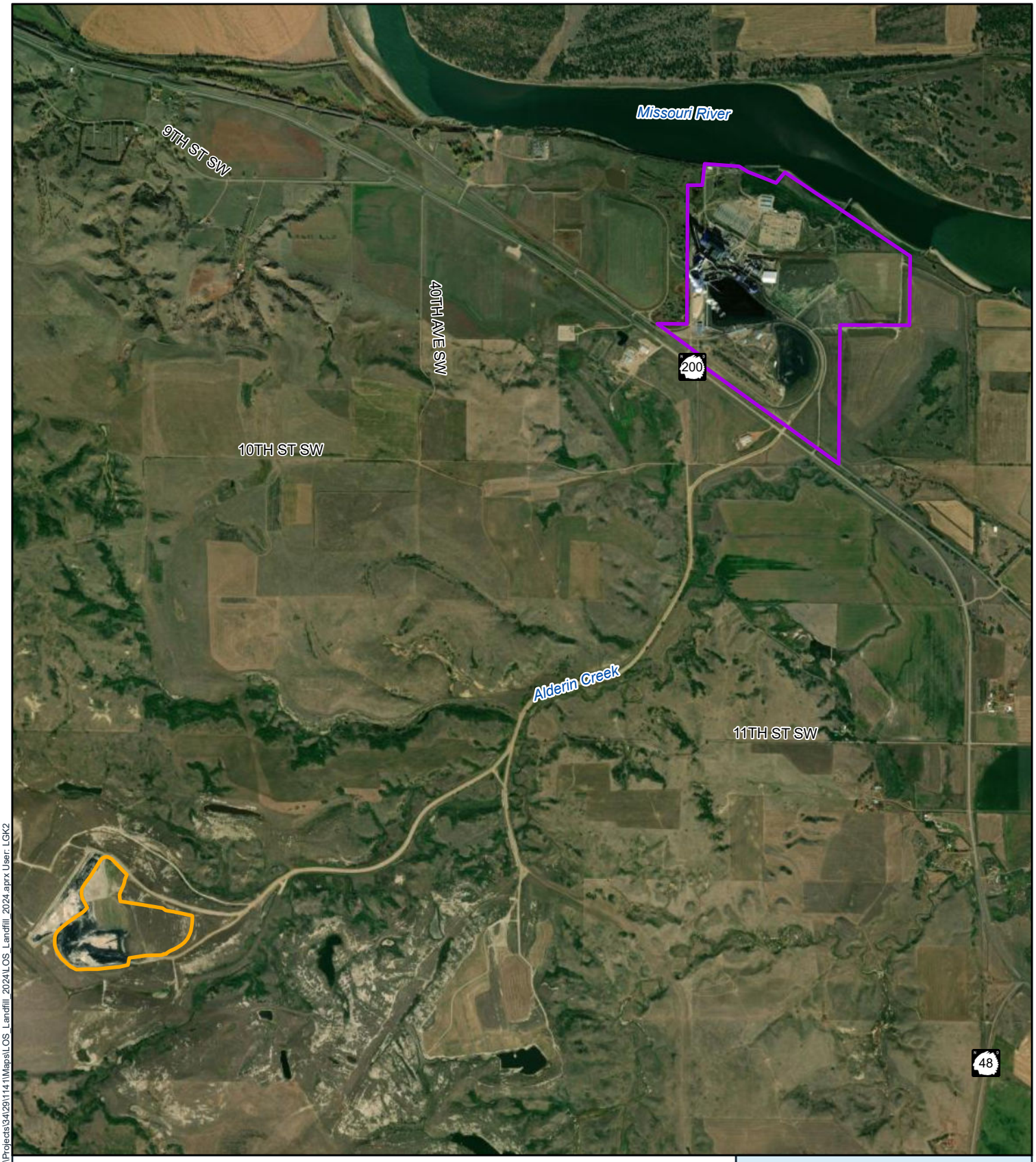
I certify that the written demonstration provided (above) for chloride in monitoring wells MW-2016-12 and MW-2016-13 is supported by the data, accurate, and consistent with our review of the groundwater data collected to date and as required under the CCR Rule ((§ 257.94(e)(2)). I further certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

REGISTERED PROFESSIONAL ENGINEER
KEVIN L. SOLIE
PE-9488
DATE 11-27-2024
NORTH DAKOTA

Kevin Solie, P.E.
ND P.E. License No. 9488
Barr Engineering Company

Dated this 27th day of November 2024

Figures



Leland Olds Power Plant

LOS Landfill

N

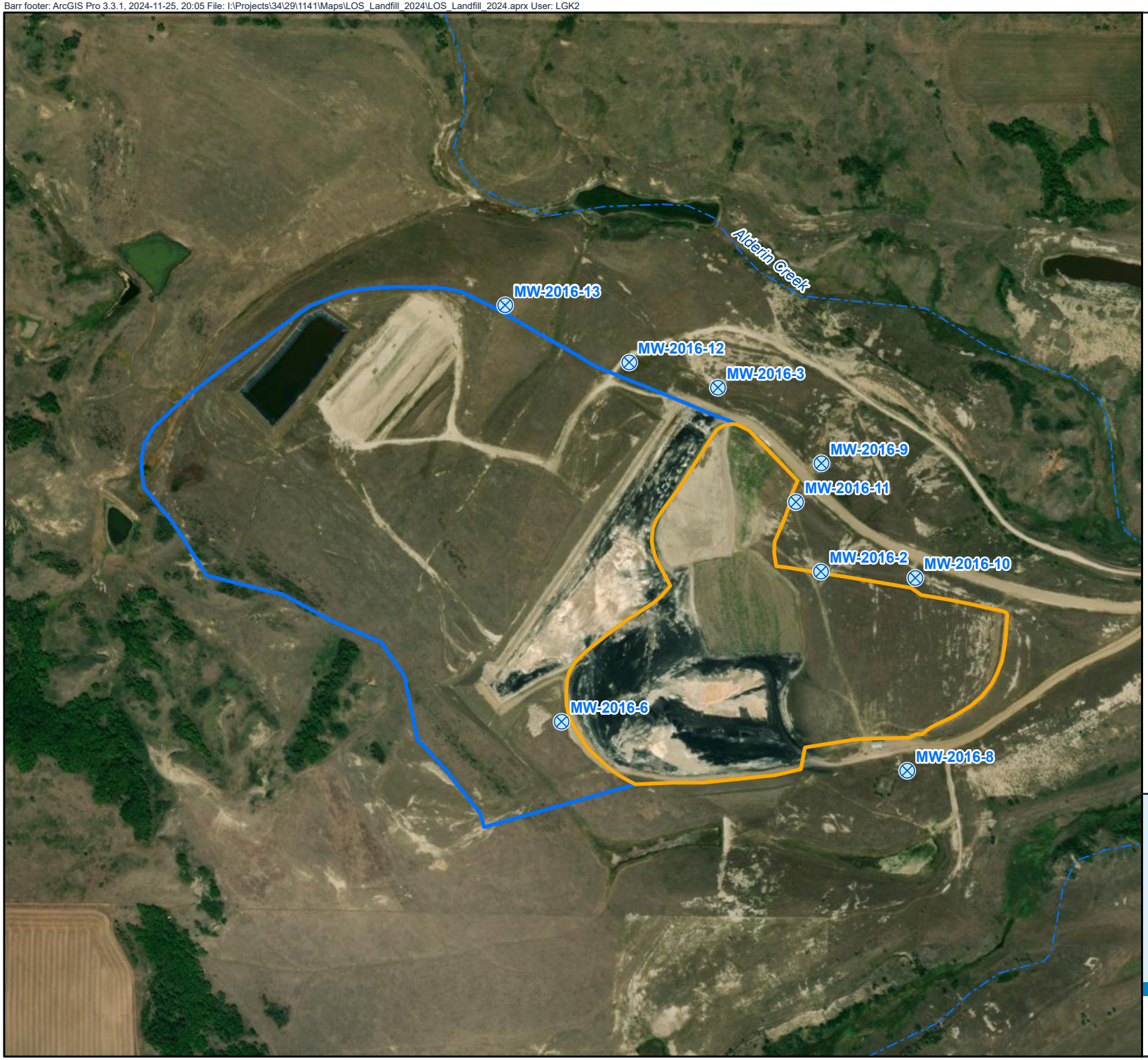
0 1,500 3,000

Feet

SITE SETTING
LOS Landfill
Basin Electric Power Cooperative

FIGURE 1

BARR



Monitoring Well

Existing Limits of Waste

Expansion Limits of Waste

N

0 400 800

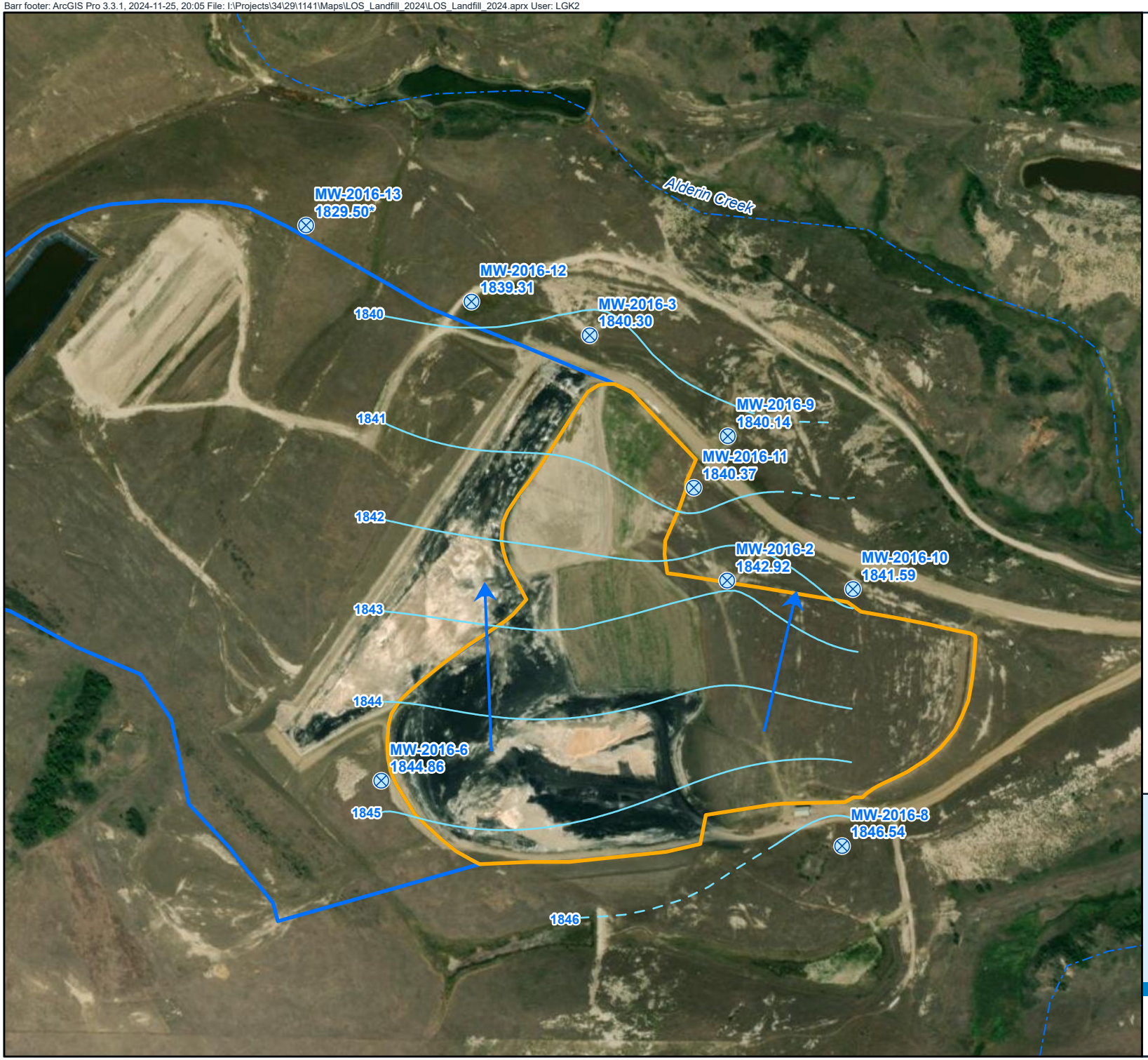
Feet

Imagery: ESRI 2024

MONITORING NETWORK
LOS Landfill
Basin Electric Power Cooperative

FIGURE 2

BARR



- Monitoring Well
- Existing Limits of Waste
- Expansion Limits of Waste
- Groundwater Contour
- Inferred Groundwater Contour
- Flow Direction

Notes:
* = omitted from contour interpolation
Groundwater elevations were obtained on May 22, 2024

N

0 300 600
Feet

Imagery: ESRI 2024

POTENTIOMETRIC SURFACE
LOS Landfill
Basin Electric Power Cooperative

FIGURE 3

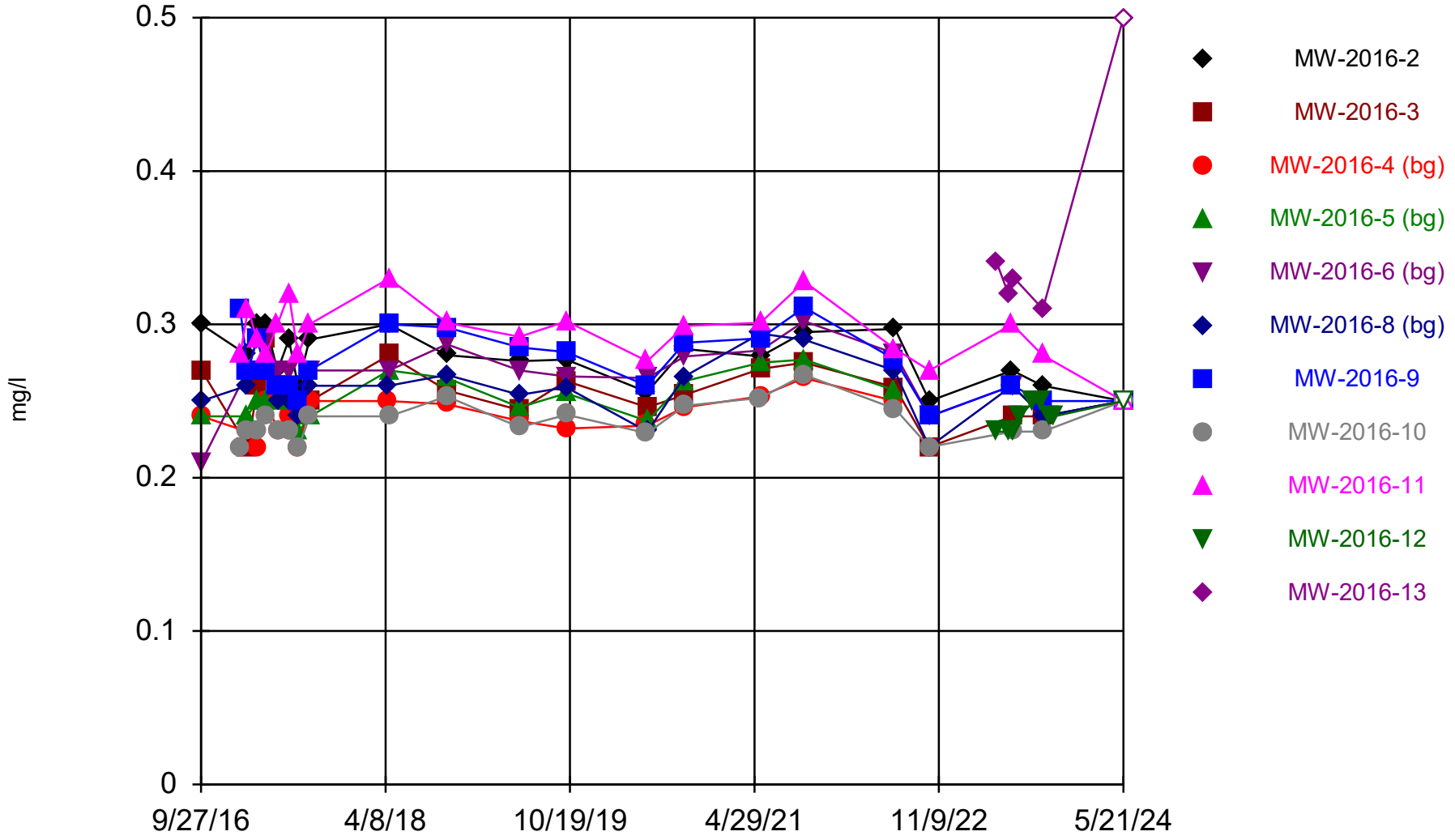
BARR

Attachments

Attachment A

Hollow symbols indicate censored values.

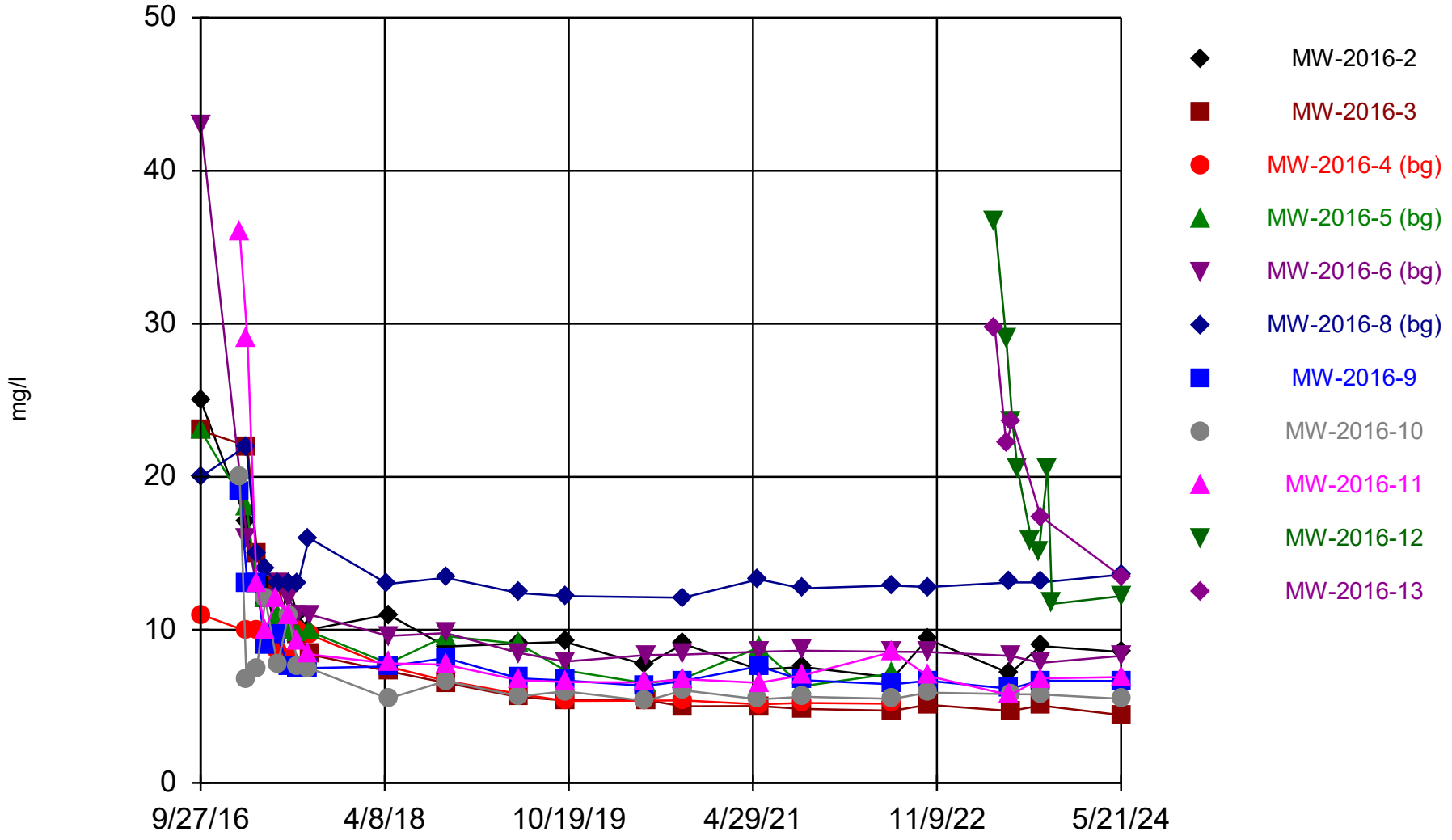
Boron, total



Time Series Analysis Run 8/28/2024 2:16 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Calcium, total



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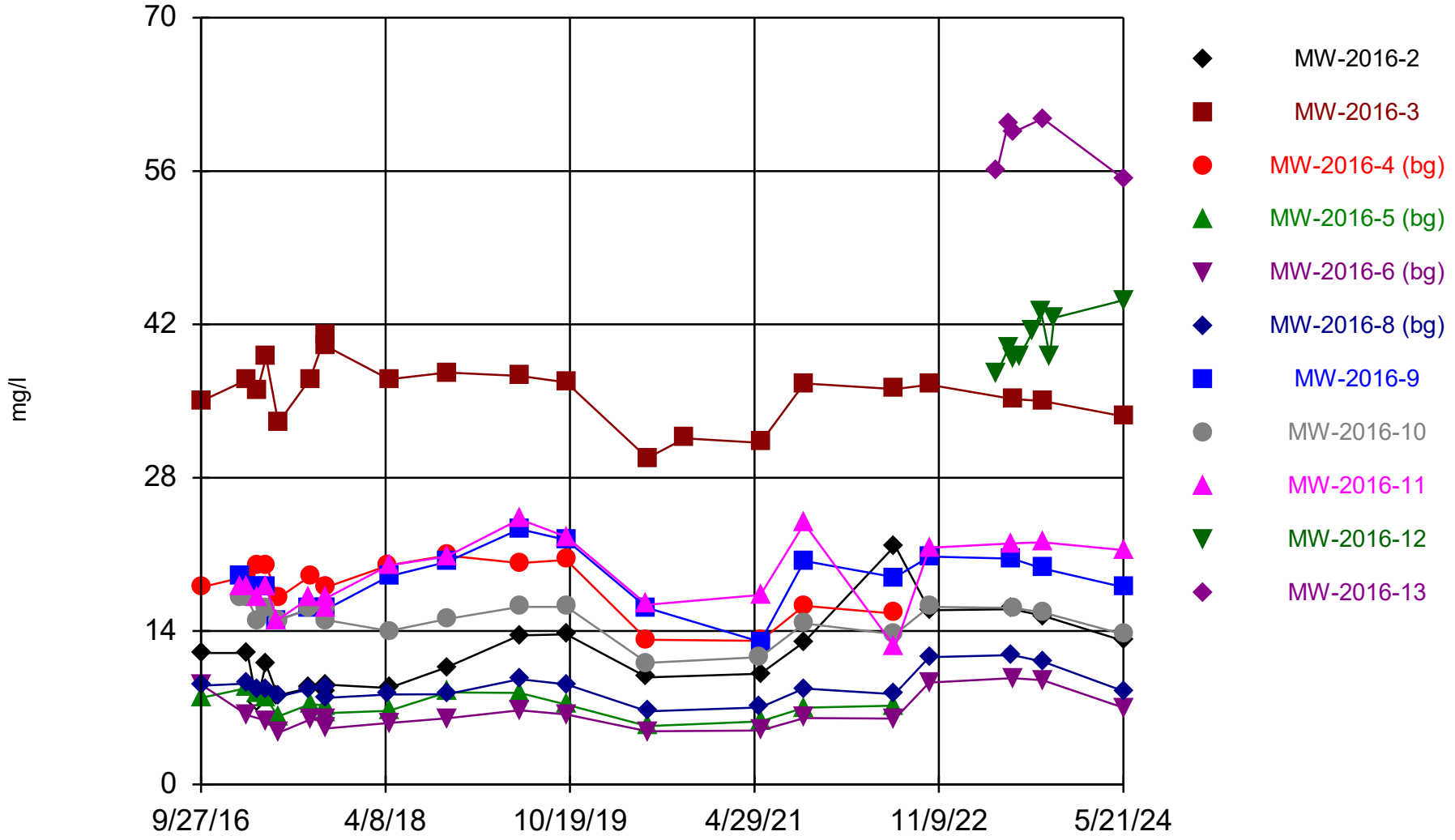
Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Hollow symbols indicate censored values.

Chloride



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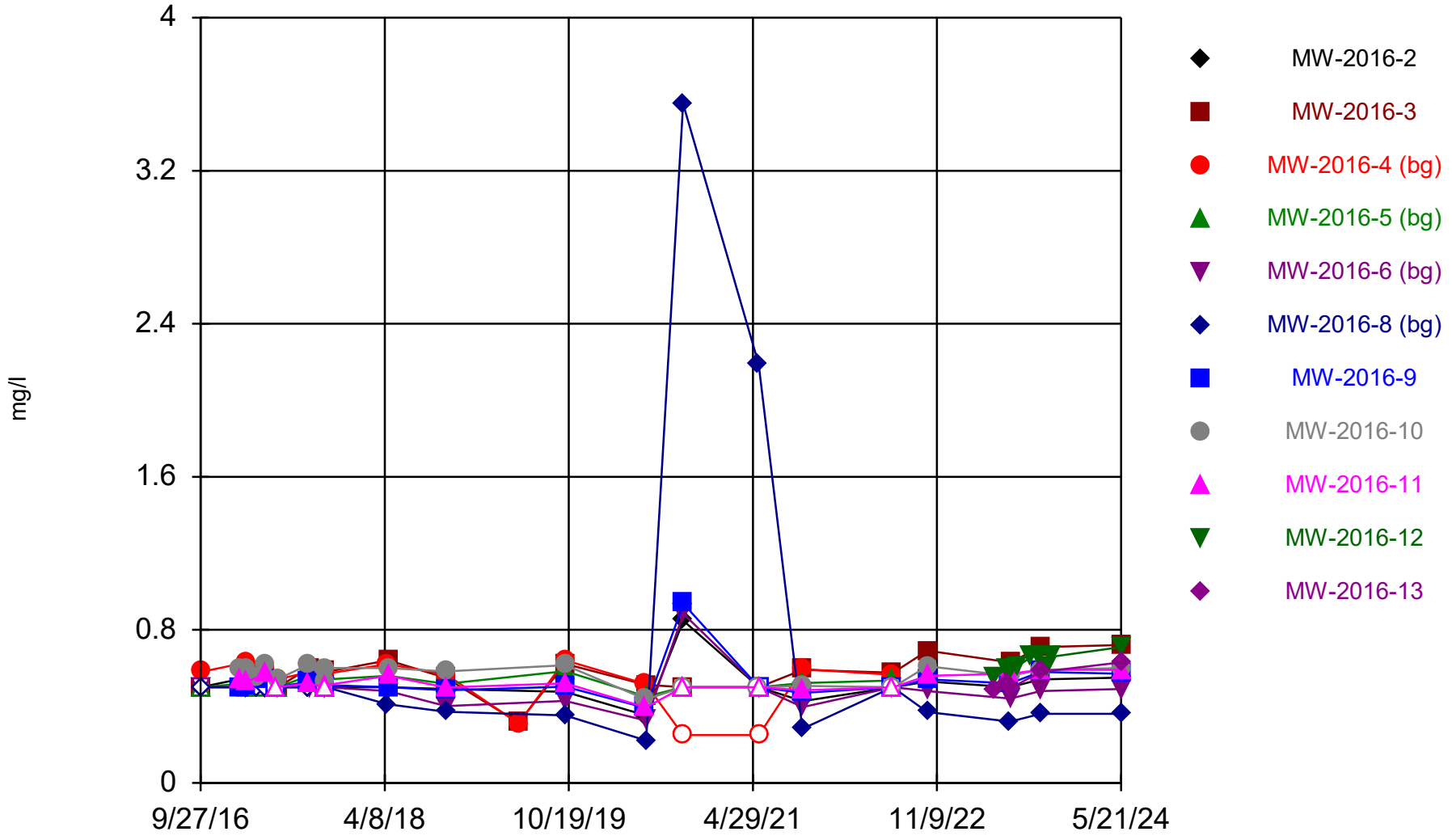
Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Hollow symbols indicate censored values.

Fluoride



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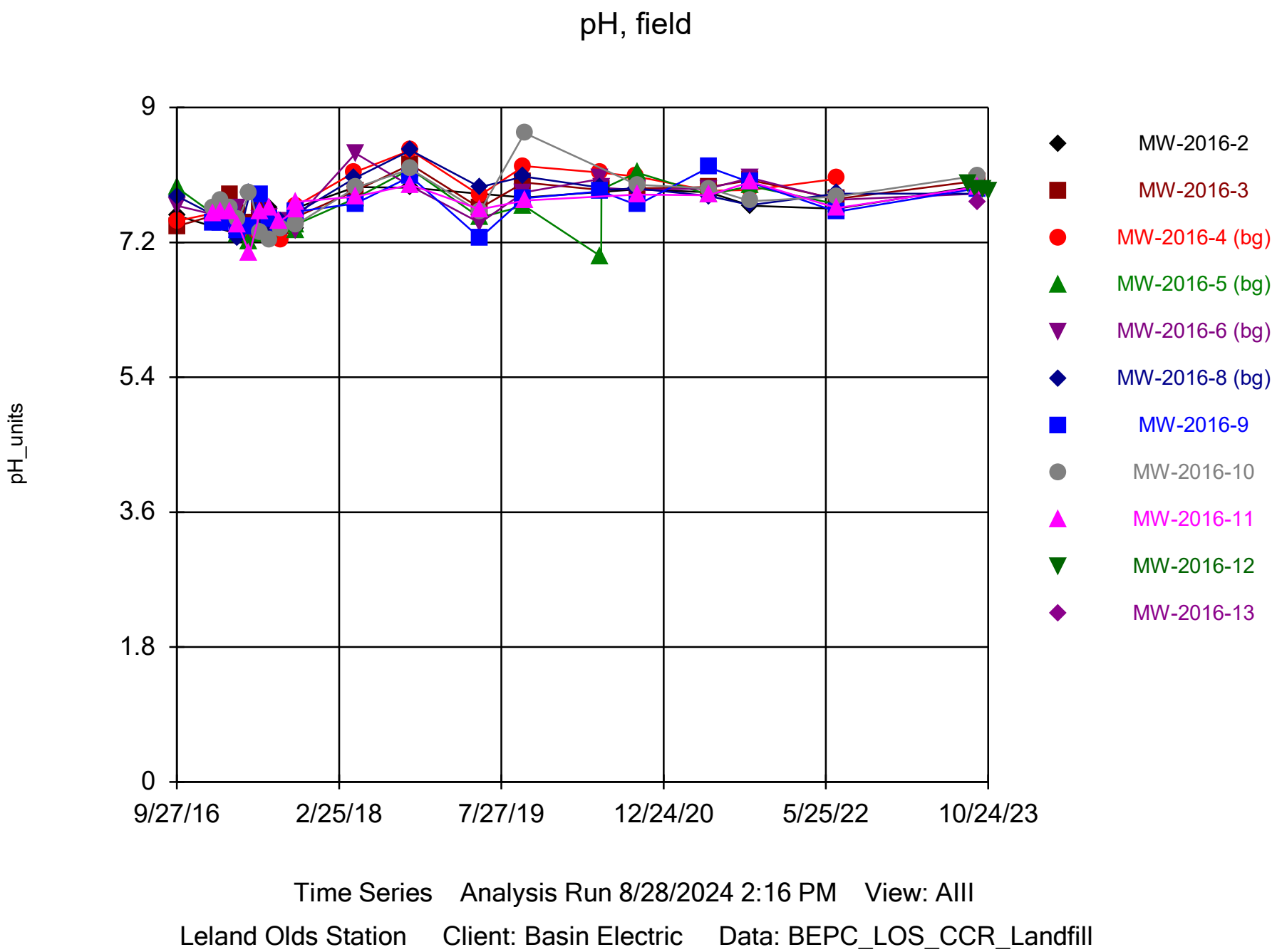
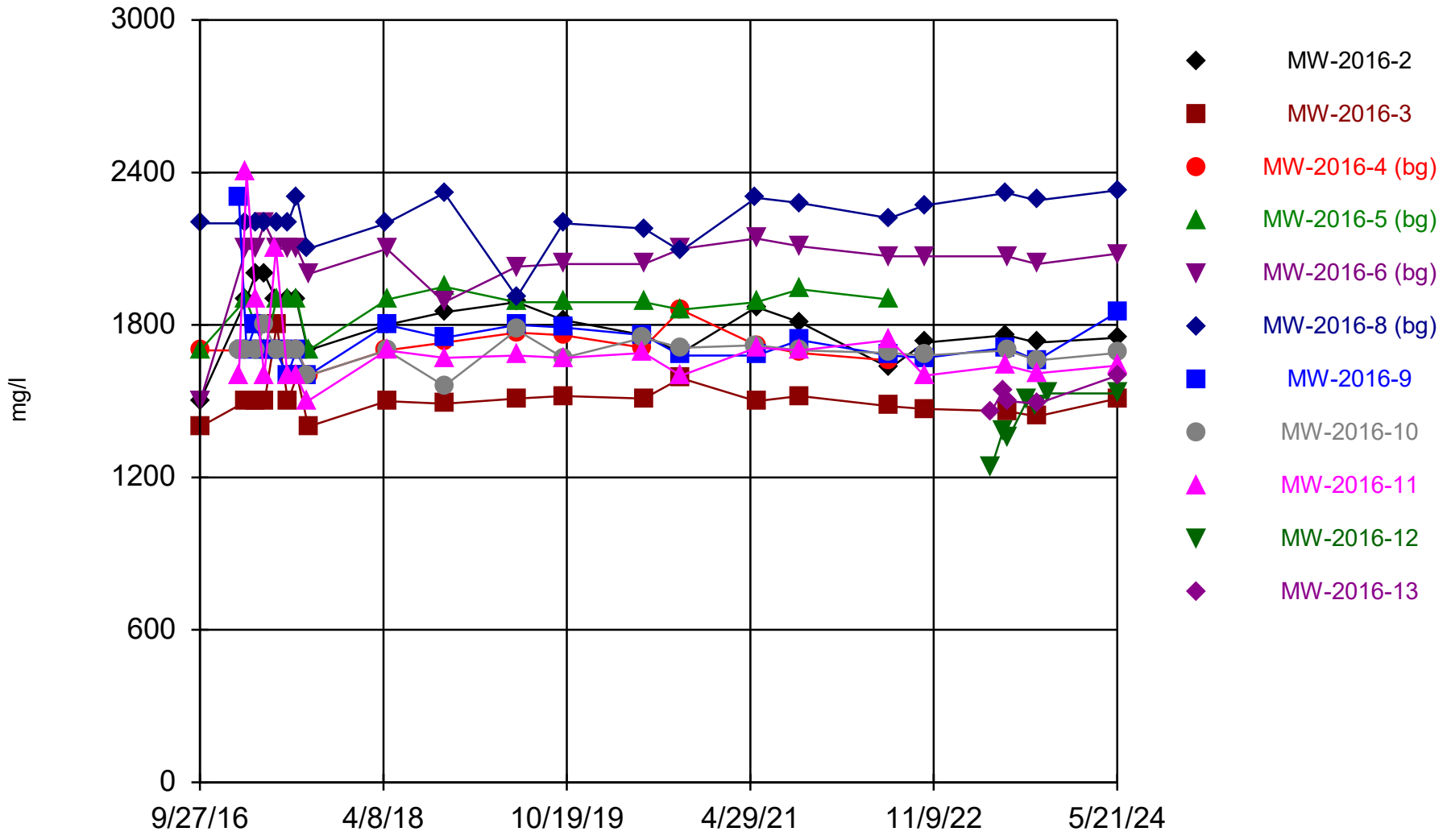
Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill



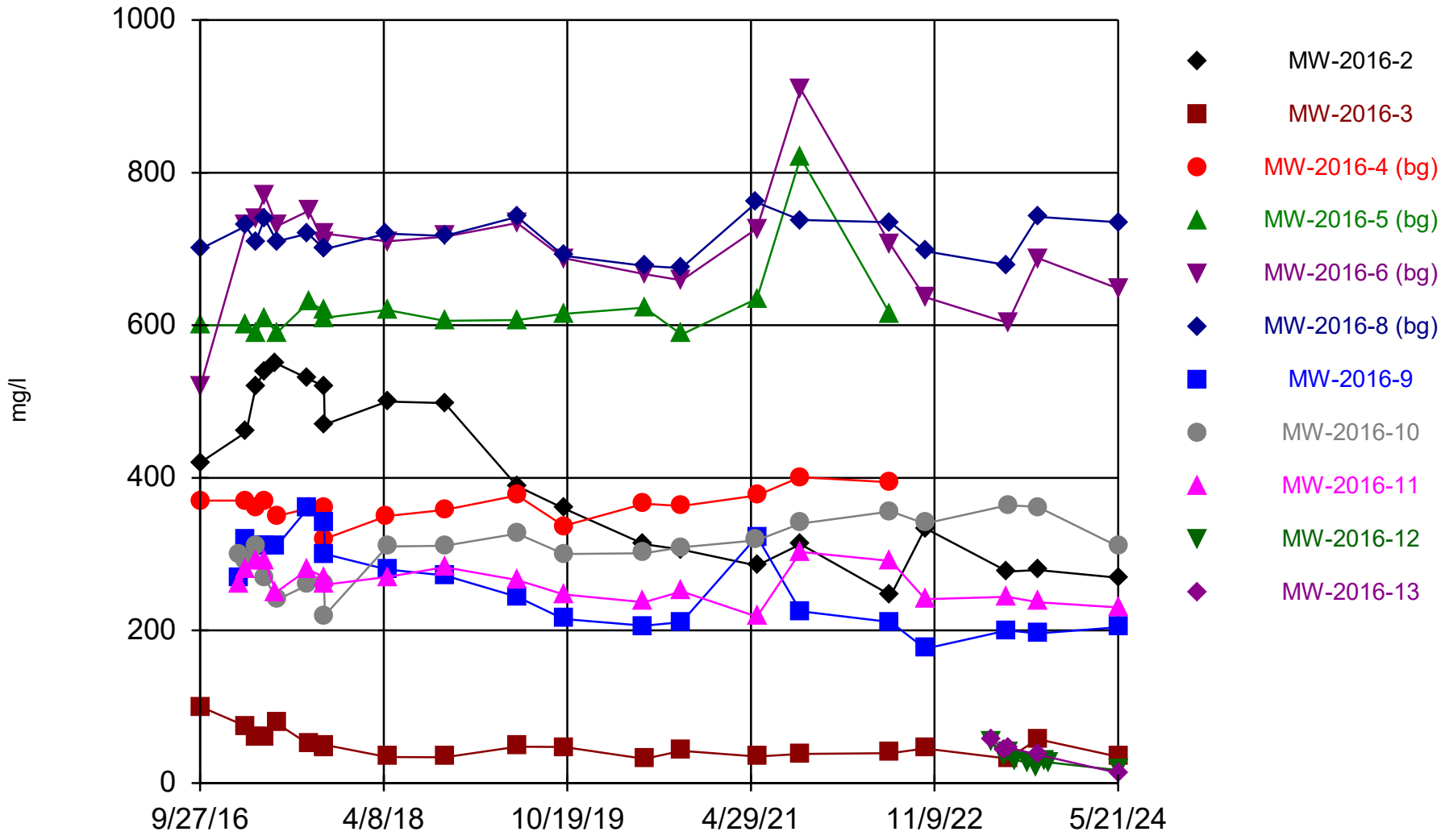
Solids, total dissolved



Time Series Analysis Run 8/28/2024 2:16 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Sulfate, as SO4



Time Series Analysis Run 8/28/2024 2:16 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Attachment B

MINNESOTA VALLEY TESTING LABORATORIES, INC.
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1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724
51 L Avenue ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.mvtl.com

Report Date: 15 Jan 10
Lab Number: 09-M4377
Work Order #:81-1634
Account #: 002040
Date Sampled: 18 Dec 09
Date Received: 21 Dec 09 10:00
PO #: 529077

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 1 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
SPLP Extraction				1312	29 Dec 09	SC
pH	12.6	units	N/A	SM4500 H+ B	30 Dec 09 17:00	JRS
Specific Conductance	15110	umhos/cm	N/A	SM2510-B	30 Dec 09 17:00	JRS
Total Suspended Solids	4	mg/l	1	SM2540-D	30 Dec 09 15:30	JRS
Total Alkalinity	2880	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Phenolphthalein Alk	2860	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Bicarbonate	< 4	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Carbonate	40	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Hydroxide	2840	mg/l CaCO3	0	SM2320-B	30 Dec 09 17:00	JRS
Tot Dis Solids(Summation)	5820	mg/l	NA	SM1030-F	15 Jan 10 13:45	Calculated
Total Hardness as CaCO3	3050	mg/l	NA	SM2340-B	6 Jan 10 9:00	Calculated
Hardness in grains/gallon	178	gr/gal	NA	SM2340-B	6 Jan 10 9:00	Calculated
Cation Summation	104	meq/L	NA	SM1030-F	6 Jan 10 9:00	Calculated
Anion Summation	95.6	meq/L	NA	SM1030-F	15 Jan 10 13:45	Calculated
Percent Error	4.32	%	NA	SM1030-F	15 Jan 10 13:45	Calculated
Sodium Adsorption Ratio	7.30		NA	USDA 20b	6 Jan 10 9:00	Calculated
Fluoride	2.75	mg/l	0.10	SM4500-F-C	30 Dec 09 17:00	JRS
Sulfate	1810	mg/l	5.00	ASTM D516-02	15 Jan 10 13:45	Morgan
Chloride	12.4	mg/l	1.0	SM4500-Cl-E	14 Jan 10 11:20	Morgan
Nitrate-Nitrite as N	< 0.1	mg/l	0.10	EPA 353.2	13 Jan 10 13:30	Morgan
Ammonia-Nitrogen as N	0.14	mg/l	0.10	EPA 350.1	4 Jan 10 12:20	Morgan
Phosphorus as P - Total	< 0.1	mg/l	0.10	EPA 365.1	12 Jan 10 13:00	Morgan
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	30 Dec 09 8:30	Eric
Calcium - Total	1220	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Magnesium - Total	< 5	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Sodium - Total	929	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Potassium - Total	116	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Aluminum - Total	< 0.1	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Barium - Total	0.36	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Iron - Total	< 0.1	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Boron - Total	< 1	mg/l	0.10	6010	7 Jan 10 10:00	Stacy
Antimony - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Arsenic - Total	0.0050	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Beryllium - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Cadmium - Total	0.00103	mg/l	0.00100	6020	4 Jan 10 9:34	Claudette
Chromium - Total	0.1642	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Cobalt - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Copper - Total	0.0224	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Lead - Total	0.0214	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
! = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

MINNESOTA VALLEY TESTING LABORATORIES, INC.
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MEMBER ACIL

Report Date: 15 Jan 10
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Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 1 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Manganese - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Nickel - Total	0.0159	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Selenium - Total	0.0336	mg/l	0.0020	6020	4 Jan 10 15:28	Claudette
Silver - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Thallium - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Vanadium - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Zinc - Total	< 0.01	mg/l	0.0100	6020	4 Jan 10 9:34	Claudette

All analysese were performed on the extract from an ASTM D3987 extraction with a modified solution to solids ratio of 4:1.

Approved by: C Cantell

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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www.mvtl.com
MEMBER ACIL

Report Date: 15 Jan 10
Lab Number: 09-M4378
Work Order #:81-1634
Account #: 002040
Date Sampled: 18 Dec 09
Date Received: 21 Dec 09 10:00
PO #: 529077

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 2 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
SPLP Extraction				1312	29 Dec 09	SC
pH	12.4	units	N/A	SM4500 H+ B	30 Dec 09 17:00	JRS
Specific Conductance	9842	umhos/cm	N/A	SM2510-B	30 Dec 09 17:00	JRS
Total Suspended Solids	1	mg/l	1	SM2540-D	30 Dec 09 15:30	JRS
Total Alkalinity	1520	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Phenolphthalein Alk	1500	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Bicarbonate	< 4	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Carbonate	40	mg/l CaCO3	4	SM2320-B	30 Dec 09 17:00	JRS
Hydroxide	1480	mg/l CaCO3	0	SM2320-B	30 Dec 09 17:00	JRS
Tot Dis Solids(Summation)	3830	mg/l	NA	SM1030-F	15 Jan 10 13:45	Calculated
Total Hardness as CaCO3	542	mg/l	NA	SM2340-B	6 Jan 10 9:00	Calculated
Hardness in grains/gallon	31.7	gr/gal	NA	SM2340-B	6 Jan 10 9:00	Calculated
Cation Summation	61.3	meq/L	NA	SM1030-F	6 Jan 10 9:00	Calculated
Anion Summation	60.4	meq/L	NA	SM1030-F	15 Jan 10 13:45	Calculated
Percent Error	0.72	%	NA	SM1030-F	15 Jan 10 13:45	Calculated
Sodium Adsorption Ratio	18.5		NA	USDA 20b	6 Jan 10 9:00	Calculated
Fluoride	2.56	mg/l	0.10	SM4500-F-C	30 Dec 09 17:00	JRS
Sulfate	1420	mg/l	5.00	ASTM D516-02	15 Jan 10 13:45	Morgan
Chloride	14.8	mg/l	1.0	SM4500-Cl-E	14 Jan 10 11:20	Morgan
Nitrate-Nitrite as N	0.29	mg/l	0.10	EPA 353.2	13 Jan 10 13:30	Morgan
Ammonia-Nitrogen as N	< 0.1	mg/l	0.10	EPA 350.1	4 Jan 10 12:20	Morgan
Phosphorus as P - Total	< 0.1	mg/l	0.10	EPA 365.1	12 Jan 10 13:00	Morgan
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	30 Dec 09 8:30	Eric
Calcium - Total	217	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Magnesium - Total	< 5	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Sodium - Total	1010	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Potassium - Total	255	mg/l	1.0	6010	6 Jan 10 9:00	Stacy
Aluminum - Total	0.14	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Barium - Total	0.40	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Iron - Total	< 0.1	mg/l	0.10	6010	5 Jan 10 8:55	Stacy
Boron - Total	< 1	mg/l	0.10	6010	7 Jan 10 10:00	Stacy
Antimony - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Arsenic - Total	0.0068	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Beryllium - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Cadmium - Total	0.00216	mg/l	0.00100	6020	4 Jan 10 9:34	Claudette
Chromium - Total	0.2055	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Cobalt - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Copper - Total	0.0225	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Lead - Total	0.0067	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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51 L Avenue ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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MEMBER ACIL

Report Date: 15 Jan 10
Lab Number: 09-M4378
Work Order #:81-1634
Account #: 002040
Date Sampled: 18 Dec 09
Date Received: 21 Dec 09 10:00
PO #: 529077

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 2 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Manganese - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Nickel - Total	0.0030	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Selenium - Total	0.0491	mg/l	0.0020	6020	4 Jan 10 15:28	Claudette
Silver - Total	< 0.001	mg/l	0.0010	6020	4 Jan 10 9:34	Claudette
Thallium - Total	< 0.002	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Vanadium - Total	0.0212	mg/l	0.0020	6020	4 Jan 10 9:34	Claudette
Zinc - Total	< 0.01	mg/l	0.0100	6020	4 Jan 10 9:34	Claudette

All analysese were performed on the extract from an ASTM D3987 extraction with a modified solution to solids ratio of 4:1.

Approved by: 

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
! = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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MEMBER ACIL

Sample Number: 09-M3826

Report Date: 1/15/10

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Work Order #: 81-1488

Date Collected: 11/ 6/09

Date Received: 11/11/09

Sample Description: Unit 1 Fly Ash

* PROXIMATE *			* ULTIMATE *		
ANALYTE	AS RECEIVED	DRY BASIS	ANALYTE	AS RECEIVED	DRY BASIS

* SULFUR FORMS *			* ASH FUSION *		
ANALYTE	AS RECEIVED	DRY BASIS	ANALYTE	REDUCING	OXIDIZING

* MINERAL ANALYSIS OF ASH *			* MISCELLANEOUS *		
ANALYTE	DRY BASIS		ANALYTE	AS RECEIVED	DRY BASIS
Silicon Dioxide in Ash	37.48	wt. %			
Aluminum Oxide in Ash	13.41	wt. %			
Titanium Dioxide in Ash	0.56	wt. %			
Iron Oxide in Ash	7.11	wt. %			
Calcium Oxide in Ash	21.41	wt. %			
Magnesium Oxide in Ash	8.53	wt. %			
Potassium Oxide in Ash	1.07	wt. %			
Sodium Oxide in Ash	4.05	wt. %			
SO3 in Ash	2.38	wt. %			
P2O5 in Ash	0.46	wt. %			
Strontium Oxide in Ash	0.63	wt. %			
Barium Oxide in Ash	1.00	wt. %			
Manganese Dioxide in Ash	0.12	wt. %			

Approved By: D. Zarda

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MEMBER ACIL

Sample Number: 09-M3828

Report Date: 1/15/10

Work Order #: 81-1488

Date Collected: 11/ 6/09

Date Received: 11/11/09

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 2 Fly Ash

* PROXIMATE * ANALYTE	AS RECEIVED	DRY BASIS

* ULTIMATE * ANALYTE	AS RECEIVED	DRY BASIS

* SULFUR FORMS * ANALYTE	AS RECEIVED	DRY BASIS

* ASH FUSION * ANALYTE	REDUCING	OXIDIZING

* MINERAL ANALYSIS OF ASH * ANALYTE	DRY BASIS	
Silicon Dioxide in Ash	29.98	wt. %
Aluminum Oxide in Ash	12.12	wt. %
Titanium Dioxide in Ash	0.46	wt. %
Iron Oxide in Ash	5.11	wt. %
Calcium Oxide in Ash	20.93	wt. %
Magnesium Oxide in Ash	7.86	wt. %
Potassium Oxide in Ash	1.62	wt. %
Sodium Oxide in Ash	6.32	wt. %
SO3 in Ash	11.38	wt. %
P2O5 in Ash	0.42	wt. %
Strontium Oxide in Ash	0.65	wt. %
Barium Oxide in Ash	1.25	wt. %
Manganese Dioxide in Ash	0.10	wt. %

* MISCELLANEOUS * ANALYTE	AS RECEIVED	DRY BASIS

Approved By: D Zander

MINNESOTA VALLEY TESTING LABORATORIES, INC.
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Report Date: 15 Jan 10
Lab Number: 09-M3830
Work Order #:81-1488
Account #: 002040
Date Sampled: 6 Nov 09
Date Received: 11 Nov 09 10:00

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 1 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH	12.6	units	N/A	SM4500 H+ B	18 Nov 09 17:00	JRS
Specific Conductance	14430	umhos/cm	N/A	SM2510-B	18 Nov 09 17:00	JRS
Total Suspended Solids	2	mg/l	1	SM2540-D	18 Nov 09 15:50	JRS
Total Alkalinity	2820	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Phenolphthalein Alk	2810	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Bicarbonate	< 4	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Carbonate	20	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Hydroxide	2800	mg/l CaCO3	0	SM2320-B	18 Nov 09 17:00	JRS
Tot Dis Solids(Summation)	5520	mg/l	NA	SM1030-F	20 Nov 09 14:00	Calculated
Total Hardness as CaCO3	3170	mg/l	NA	SM2340-B	20 Nov 09 8:55	Calculated
Hardness in grains/gallon	185	gr/gal	NA	SM2340-B	20 Nov 09 8:55	Calculated
Cation Summation	100	meq/L	NA	SM1030-F	23 Nov 09 12:00	Calculated
Anion Summation	91.1	meq/L	NA	SM1030-F	20 Nov 09 14:00	Calculated
Percent Error	4.84	%	NA	SM1030-F	23 Nov 09 12:00	Calculated
Sodium Adsorption Ratio	6.08		NA	USDA 20b	20 Nov 09 8:55	Calculated
Gross Alpha Radiation	Attached	pCi/l			21 Dec 09 5:22	
Radium 226	Attached	pCi/l			15 Dec 09 13:38	
Radium 228	Attached	pCi/l			9 Dec 09 15:28	
Fluoride	3.45	mg/l	0.10	SM4500-F-C	19 Nov 09 14:00	Morgan
Sulfate	1650	mg/l	5.00	ASTM D516-02	20 Nov 09 14:00	Morgan
Chloride	11.8	mg/l	1.0	SM4500-Cl-E	20 Nov 09 10:00	Morgan
Nitrate-Nitrite as N	0.11	mg/l	0.10	EPA 353.2	18 Nov 09 10:30	Morgan
Ammonia-Nitrogen as N	< 0.1	mg/l	0.10	EPA 350.1	23 Nov 09 12:00	Morgan
Phosphorus as P - Total	0.18	mg/l	0.10	EPA 365.1	1 Dec 09 12:30	Morgan
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Nov 09 8:30	Eric
Calcium - Total	1270	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Magnesium - Total	< 5	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Sodium - Total	790	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Potassium - Total	103	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Aluminum - Total	< 0.5	mg/l	0.10	6010	23 Nov 09 8:57	Stacy
Iron - Total	< 0.5	mg/l	0.10	6010	23 Nov 09 8:57	Stacy
Boron - Total	0.20	mg/l	0.10	6010	2 Dec 09 9:23	Stacy
Antimony - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Arsenic - Total	0.0068	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Barium - Total	0.4655	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Beryllium - Total	< 0.001	mg/l	0.0010	6020	25 Nov 09 14:25	Claudette
Cadmium - Total	< 0.002	mg/l	0.00100	6020	24 Nov 09 9:18	Claudette
Chromium - Total	0.1451	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Cobalt - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Copper - Total	0.0063	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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51 L Avenue ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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Report Date: 15 Jan 10
Lab Number: 09-M3830
Work Order #:81-1488
Account #: 002040
Date Sampled: 6 Nov 09
Date Received: 11 Nov 09 10:00

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 1 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Lead - Total	0.0058	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Manganese - Total	0.0031	mg/l	0.0010	6020	24 Nov 09 9:18	Claudette
Nickel - Total	0.0301	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Selenium - Total	0.0302	mg/l	0.0020	6020	24 Nov 09 14:10	Claudette
Silver - Total	< 0.01**	mg/l	0.0010	6020	24 Nov 09 9:18	Claudette
Thallium - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Vanadium - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Zinc - Total	< 0.02	mg/l	0.0100	6020	24 Nov 09 9:18	Claudette
Uranium	< 0.002	mg/l	0.002	6020	24 Nov 09 9:18	Claudette

All analyses were performed on the extract from an ASTM D3987 extraction with a modified solution to solids ratio of 4:1.

** Silver was reported at ICP Reporting Limits for historical purposes.

Approved by: C Canuel

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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Report Date: 15 Jan 10
Lab Number: 09-M3832
Work Order #:81-1488
Account #: 002040
Date Sampled: 6 Nov 09
Date Received: 11 Nov 09 10:00

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 2 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH	12.4	units	N/A	SM4500 H+ B	18 Nov 09 17:00	JRS
Specific Conductance	28610	umhos/cm	N/A	SM2510-B	18 Nov 09 17:00	JRS
Total Suspended Solids	34	mg/l	1	SM2540-D	18 Nov 09 15:50	JRS
Total Alkalinity	2260	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Phenolphthalein Alk	2200	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Bicarbonate	< 4	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Carbonate	120	mg/l CaCO3	4	SM2320-B	18 Nov 09 17:00	JRS
Hydroxide	2140	mg/l CaCO3	0	SM2320-B	18 Nov 09 17:00	JRS
Tot Dis Solids(Summation)	21100	mg/l	NA	SM1030-F	25 Nov 09 9:00	Calculated
Total Hardness as CaCO3	1410	mg/l	NA	SM2340-B	20 Nov 09 8:55	Calculated
Hardness in grains/gallon	82.2	gr/gal	NA	SM2340-B	20 Nov 09 8:55	Calculated
Cation Summation	294	meq/L	NA	SM1030-F	23 Nov 09 12:00	Calculated
Anion Summation	316	meq/L	NA	SM1030-F	25 Nov 09 9:00	Calculated
Percent Error	-3.64	%	NA	SM1030-F	25 Nov 09 9:00	Calculated
Sodium Adsorption Ratio	69.6		NA	USDA 20b	20 Nov 09 8:55	Calculated
Gross Alpha Radiation	Attached	pCi/l			11 Jan 10 23:14	
Radium 226	Attached	pCi/l			21 Dec 09 15:36	
Radium 228	Attached	pCi/l			16 Dec 09 16:15	
Fluoride	4.05	mg/l	0.10	SM4500-F-C	19 Nov 09 14:00	Morgan
Sulfate	13000	mg/l	5.00	ASTM D516-02	24 Nov 09 13:00	Morgan
Chloride	7.6	mg/l	1.0	SM4500-Cl-E	24 Nov 09 8:00	Morgan
Nitrate-Nitrite as N	2.21	mg/l	0.10	EPA 353.2	25 Nov 09 9:00	Morgan
Ammonia-Nitrogen as N	1.05	mg/l	0.10	EPA 350.1	23 Nov 09 12:00	Morgan
Phosphorus as P - Total	< 0.1	mg/l	0.10	EPA 365.1	1 Dec 09 12:30	Morgan
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Nov 09 8:30	Eric
Calcium - Total	563	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Magnesium - Total	< 5	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Sodium - Total	6040	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Potassium - Total	123	mg/l	1.0	6010	20 Nov 09 8:55	Stacy
Aluminum - Total	< 1	mg/l	0.10	6010	23 Nov 09 8:57	Stacy
Iron - Total	< 1	mg/l	0.10	6010	23 Nov 09 8:57	Stacy
Boron - Total	21.4	mg/l	0.10	6010	2 Dec 09 9:23	Stacy
Antimony - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Arsenic - Total	0.0702	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Barium - Total	0.1602	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Beryllium - Total	< 0.001	mg/l	0.0010	6020	25 Nov 09 14:25	Claudette
Cadmium - Total	0.00430	mg/l	0.00100	6020	24 Nov 09 9:18	Claudette
Chromium - Total	0.6732	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Cobalt - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Copper - Total	0.1163	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

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MEMBER ACIL

Report Date: 15 Jan 10
Lab Number: 09-M3832
Work Order #:81-1488
Account #: 002040
Date Sampled: 6 Nov 09
Date Received: 11 Nov 09 10:00

Jim Berg
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck ND 58503

Sample Description: Unit 2 Fly Ash

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Lead - Total	0.0090	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Manganese - Total	0.0043	mg/l	0.0010	6020	24 Nov 09 9:18	Claudette
Nickel - Total	0.0124	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Selenium - Total	0.0693	mg/l	0.0020	6020	24 Nov 09 14:10	Claudette
Silver - Total	< 0.01**	mg/l	0.0010	6020	24 Nov 09 9:18	Claudette
Thallium - Total	< 0.002	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Vanadium - Total	0.0978	mg/l	0.0020	6020	24 Nov 09 9:18	Claudette
Zinc - Total	0.1528	mg/l	0.0100	6020	24 Nov 09 9:18	Claudette
Uranium	< 0.002	mg/l	0.002	6020	24 Nov 09 9:18	Claudette

All analyses were performed on the extract from an ASTM D3987 extraction with a modified solution to solids ratio of 4:1.

** Silver was reported at ICP Reporting Limits for historical purposes.

Approved by: C Cantrell

RL = Method Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix
: = Due to sample quantity
= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 038-999-267 ND # ND-00016

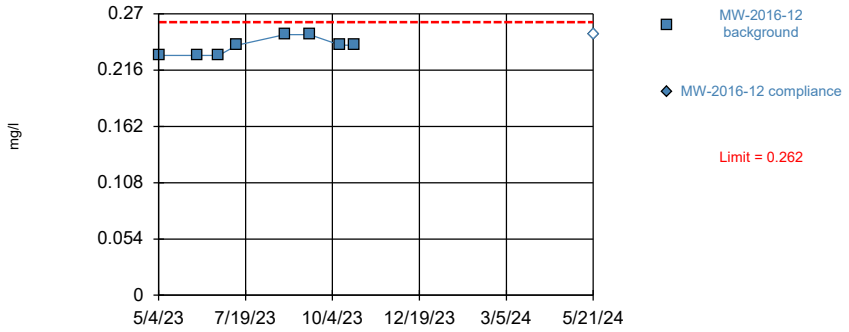
Attachment C

Hollow symbols indicate censored values.

Within Limit

Boron, total

Intrawell Parametric



Background Data Summary: Mean=0.2388, Std. Dev.=0.008345, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8349, critical = 0.818. Kappa = 2.831 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

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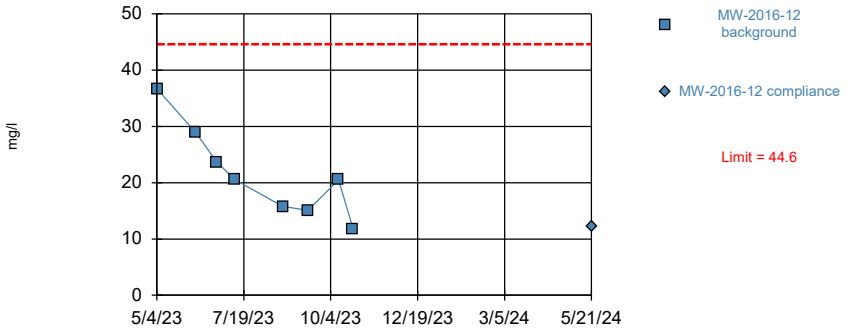
Within Limit

Calcium, total

Intrawell Parametric



Background Data Summary: Mean=21.61, Std. Dev.=8.134, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9421, critical = 0.818. Kappa = 2.831 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

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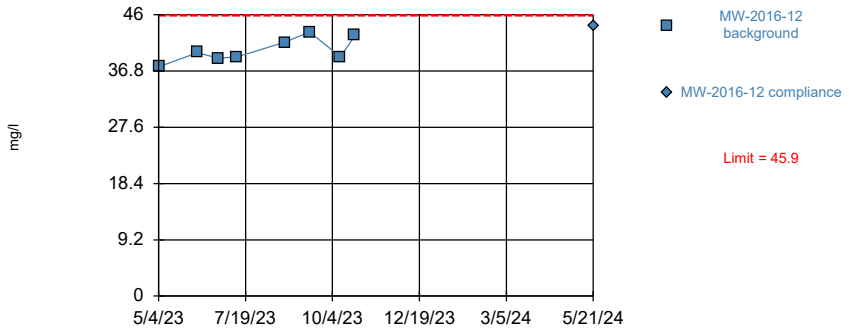
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=40.21, Std. Dev.=2, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9206, critical = 0.818. Kappa = 2.831 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

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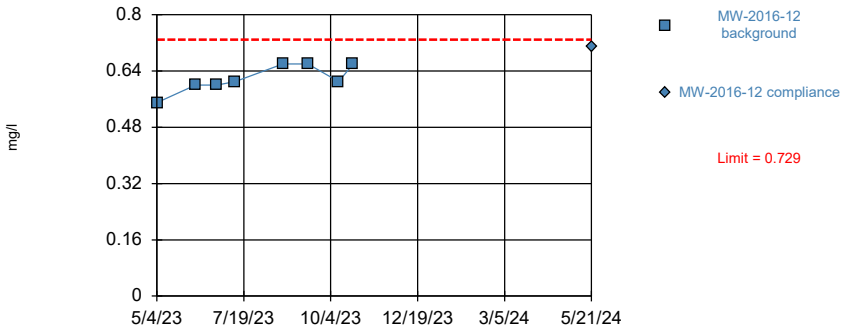
Within Limit

Fluoride

Intrawell Parametric



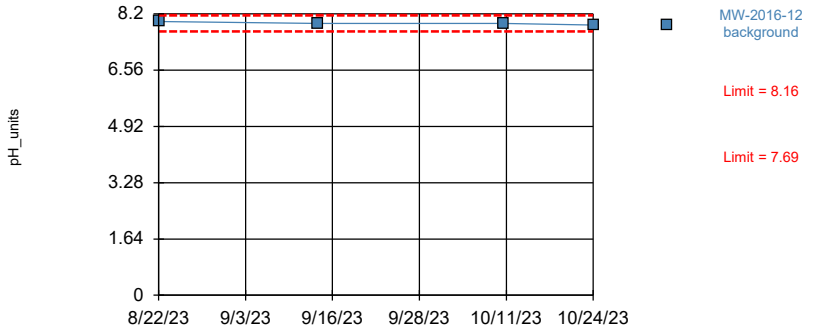
Background Data Summary: Mean=0.6188, Std. Dev.=0.03907, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8626, critical = 0.818. Kappa = 2.831 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

pH, field

Intrawell Parametric, MW-2016-12



Background Data Summary: Mean=7.925, Std. Dev.=0.04123, n=4. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.926, critical = 0.748. Kappa = 5.633 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254. Assumes 1 future value.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

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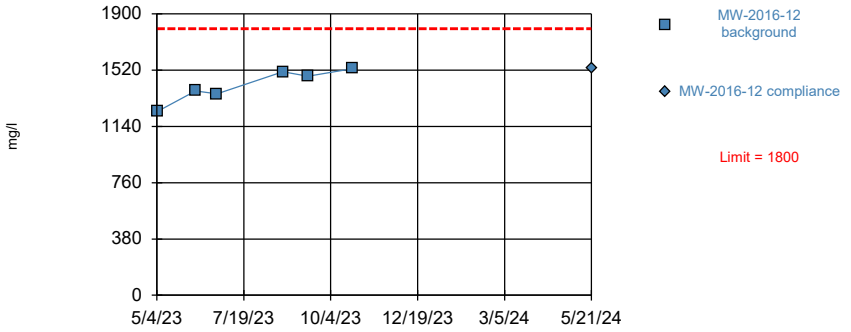
Within Limit

Solids, total dissolved

Intrawell Parametric



Background Data Summary: Mean=1417, Std. Dev.=110.8, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9184, critical = 0.788. Kappa = 3.441 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

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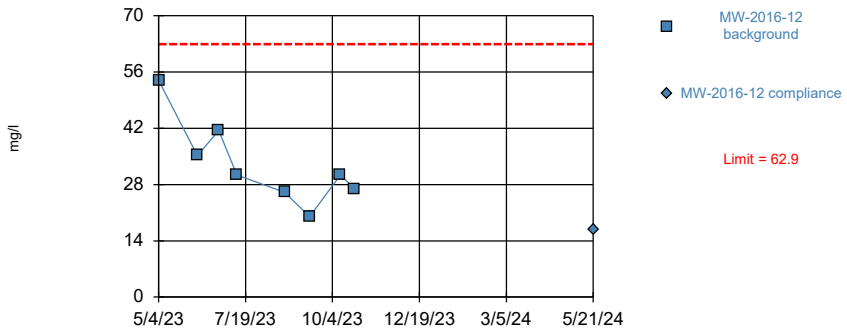
Within Limit

Sulfate, as SO4

Intrawell Parametric



Background Data Summary: Mean=33.04, Std. Dev.=10.55, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9216, critical = 0.818. Kappa = 2.831 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Prediction Limit Analysis Run 8/28/2024 3:11 PM View: AIII

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill

Prediction Limit

Leland Olds Station Client: Basin Electric Data: BEPC_LOS_CCR_Landfill Printed 8/28/2024, 3:12 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron, total (mg/l)	MW-2016-12	0.262	n/a	5/21/2024	0.25ND	No	8	0	No	0.001254	Param Intra 1 of 2
Calcium, total (mg/l)	MW-2016-12	44.6	n/a	5/21/2024	12.2	No	8	0	No	0.001254	Param Intra 1 of 2
Chloride (mg/l)	MW-2016-12	45.9	n/a	5/21/2024	44.2	No	8	0	No	0.001254	Param Intra 1 of 2
Fluoride (mg/l)	MW-2016-12	0.729	n/a	5/21/2024	0.71	No	8	0	No	0.001254	Param Intra 1 of 2
pH, field (pH_units)	MW-2016-12	8.16	7.69	n/a	1 future	n/a	4	0	No	0.0006268	Param Intra 1 of 2
Solids, total dissolve...	MW-2016-12	1800	n/a	5/21/2024	1530	No	6	0	No	0.001254	Param Intra 1 of 2
Sulfate, as SO4 (mg/l)	MW-2016-12	62.9	n/a	5/21/2024	16.8	No	8	0	No	0.001254	Param Intra 1 of 2

Appendix C Groundwater Flow Rate

Appendix C
Groundwater Flow Rate
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

LOS - Landfill Groundwater Velocity Calculation

Sampling Date	5/22/2024

Upgradient: MW-2016-6

Top of Casing Elevation	1939.31	ft amsl
Depth to Water	94.45	ft below TOC
Water Level Elevation	1844.86	ft amsl

Downgradient: MW-2016-12

Top of Casing Elevation	1911.52	ft amsl
Depth to Water	72.21	ft below TOC
Water Level Elevation	1839.31	ft amsl

horizontal hydraulic	1.21E-05	cm/s	*2023 AGMCAR (AECOM, 2024)*
conductivity (Kh)	0.0343	ft/day	
porosity (n)	0.185		*2023 AGMCAR (AECOM, 2024)*
horizontal distance	2165	ft	
WL elevation difference	5.55	ft	
gradient (i)	2.564E-03	ft/ft	
linear velocity (V)	4.75E-04	ft/day	
V	**0.2**	ft/yr	

Appendix C
Groundwater Flow Rate
2024 Annual Monitoring Report
LOS Landfill CCR Groundwater Compliance

LOS - Landfill Groundwater Velocity Calculation

Sampling Date	9/10/2024

Upgradient: MW-2016-6

Top of Casing Elevation	1939.31	ft amsl
Depth to Water	95.50	ft below TOC
Water Level Elevation	1843.81	ft amsl

Downgradient: MW-2016-3

Top of Casing Elevation	1939.88	ft amsl
Depth to Water	100.30	ft below TOC
Water Level Elevation	1839.58	ft amsl

horizontal hydraulic	1.21E-05	cm/s	
conductivity (Kh)	0.0343	ft/day	*2023 AGMCAR (AECOM, 2024)*
porosity (n)	0.185		
horizontal distance	2165	ft	*2023 AGMCAR (AECOM, 2024)*
WL elevation difference	4.23	ft	
gradient (i)	1.954E-03	ft/ft	
linear velocity (V)	3.62E-04	ft/day	
V	**0.1**	ft/yr	

Appendix D Baseline Sample Results

Appendix D
Baseline Sample Results
2024 Annual Monitoring Report
BEPC LOS Landfill

		Location	MW-2016-13	MW-2016-13	MW-2016-13	MW-2016-13	MW-2016-13	MW-2016-13
		Date	5/04/2023	6/07/2023	6/26/2023	9/20/2023	5/21/2024	9/10/2024
		Sample Type	N	N	N	N	N	N
		Status	SSource	SSource	SSource	SSource	No QC	No QC
Parameter	Analysis Location	Units						
General Parameters								
Chloride	Lab	mg/l	**56.0**	**60.4**	**59.6**	**60.8**	**55.3**	**57.5**
Fluoride	Lab	mg/l	**0.48**	**0.52**	**0.50**	**0.58**	**0.63**	**0.61**
Solids, total dissolved	Lab	mg/l	**1460**	**1540**	**1500**	**1490**	**1600**	**1580**
Sulfate, as SO4	Lab	mg/l	**58.1**	**42.2**	**45.7**	**37.0**	**12.9**	**13.3**
Dissolved oxygen	Field	mg/l	--	--	--	--	**0.19**	**0.23**
pH	Field	pH units	**7.48**	**7.77**	**7.73**	**7.74**	**7.79**	**7.76**
Redox (oxidation potential)	Field	mV	--	--	--	--	**-124.5**	**-87.6**
Specific conductance @ 25 deg C	Field	umhos/cm	--	--	--	--	**2428**	**2495**
Temperature	Field	deg C	--	--	--	--	**9.4**	**12.0**
Turbidity	Field	NTU	--	--	--	--	**3.06**	**2.19**
Total Metals								
Antimony	Lab	mg/l	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Arsenic	Lab	mg/l	< 0.002 U	< 0.002 U	**0.0021**	< 0.002 U	**0.0022**	**0.0025**
Barium	Lab	mg/l	**0.0928**	**0.0713**	**0.0588**	**0.0603**	**0.0576**	**0.0592**
Beryllium	Lab	mg/l	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U
Boron	Lab	mg/l	**0.34**	**0.32**	**0.33**	**0.31**	< 0.5 U	**0.27**
Cadmium	Lab	mg/l	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U
Calcium	Lab	mg/l	**29.7**	**22.2**	**23.6**	**17.4**	**13.5**	**11.9**
Chromium	Lab	mg/l	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Cobalt	Lab	mg/l	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Lead	Lab	mg/l	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U
Lithium	Lab	mg/l	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Mercury	Lab	mg/l	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U
Molybdenum	Lab	mg/l	**0.0651**	**0.0490**	**0.0545**	**0.0456**	**0.0692**	**0.0875**
Selenium	Lab	mg/l	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Thallium	Lab	mg/l	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U
Radiochemical Parameters								
Radium 226	Lab	pCi/l	--	--	--	--	0.2 +/- 0.2 ND	**0.2 +/- 0.1**
Radium 228	Lab	pCi/l	--	--	--	--	0.9 +/- 0.7 ND	0.08 +/- 0.6 ND
Radium, combined (226+228)	Lab	pCi/l	**0.75**	**0.65**	**0.75**	**0.6**	--	--
Radium, combined (226+228)	Barr Calculation	pCi/l	--	--	--	--	1.1 +/- 0.73 ND	**0.3 +/- 0.6 q**

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

--	Not analyzed/Not available.
N	Sample Type: Normal
FD	Sample Type: Field Duplicate
ND	Not detected.
No QC	Laboratory data has been excluded from Barr QA/QC procedures.
SSource	Laboratory and/or field data obtained from a secondary source external to Barr. Second source QA/QC evaluation procedures may or may not have been performed beyond the original data generator.
q	The combined radium result includes both detected and not detected values.
U	The analyte was analyzed for, but was not detected.