FIRST ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT, 2016-2017

GLENHAROLD CCR LANDFILL
LELAND OLDS STATION
MERCER COUNTY, NORTH DAKOTA

January 23, 2018

Prepared For:

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Revision	Revision date	Details	Authorized	Name	Position

Distribution List

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Zero	Yes	Mr. Kevin Solie / Basin Electric Power Cooperative

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1.0 INTRODUCTION

This is the annual groundwater monitoring and corrective action report for 2016-2017 for the Glenharold coal combustion residual (CCR) landfill at Leland Olds Station in Mercer County, North Dakota.

Section 1.0 provides background information on the power generating facility, the CCR unit(s) present at the facility, and the physical setting of the CCR unit(s), specifically with regard to groundwater conditions. Section 2.0 presents an overview of the groundwater monitoring and corrective action process and requirements in the CCR rule. Section 3.0 summarizes the groundwater monitoring and corrective action activities performed in calendar years 2016 and 2017, and references attachments to this report that contain detailed documentation of those activities. Section 4.0 provides an evaluation of the condition of the groundwater monitoring system. Section 5.0 summarizes the groundwater sampling and analysis conducted during the reporting period. Section 6.0 reviews the anticipated schedule for the CCR program. Section 7.0 reviews the methods and results of the statistical analysis of groundwater monitoring data. Section 8.0 provides a Summary and Conclusions.

1.1 Regulatory Background

The federal regulation 40 Code of Federal Regulations (CFR) Part 257, known as the CCR rule, became effective on October 19, 2015 and established standards for the disposal of CCR in landfills and surface impoundments (CCR units). In particular, the rule set forth groundwater monitoring and corrective action requirements for CCR units. The rule includes the requirement for an "annual groundwater monitoring and corrective action report" (annual report), with the first annual report due by January 31, 2018. The annual report is intended to document the status of the groundwater monitoring and corrective action program for each CCR unit, summarize key actions completed in the previous year, and project key activities for the upcoming year. This report is the first annual report, and includes activities performed in calendar years 2016 and 2017.

1.2 Facility Location and Operational History

Leland Olds Station is a coal-fired power generating facility located near Stanton, North Dakota. The station began commercial operations in 1966 and has a generating capacity of 669 megawatts. CCR produced at Leland Olds Station includes fly ash, bottom ash, and flue gas desulfurization (FGD) waste. The plant consists of two generating units constructed on a site bounded by the Missouri River on the north and east, the decommissioned Great River Energy Stanton Station on the west, and agricultural properties and the Glenharold CCR Landfill to the south as presented on **Figure 1**.

The CCR produced were historically treated by using water to sluice the materials into holding ponds east of the plant. In the early 1990s changes were made in the system to remove the fly ash from the waste stream by using electric motor-driven mechanical exhausters instead of water-powered hydraulic inductors. The fly ash is collected in filter receivers and transferred to a storage silo where the waste is loaded into haul trucks and disposed south of the plant at the Glenharold Landfill. Bottom ash is transported from the boilers to a water sluice that flows into concrete tanks east of the plant. The water is allowed to drain and the solids are removed by a loader to a warehouse building to dry before being hauled by a haul truck to the Glenharold Landfill for disposal. The location of the landfill relative to the station is illustrated on **Figure 1**. The general character of the unit is described below.

1.3 CCR Unit Description

The Glenharold CCR Landfill is located approximately 3 miles southwest of the Leland Olds Station generating station (**Figure 1**). The landfill encompasses approximately 148.2 acres within the former Glenharold Mine. The landfill was constructed under North Dakota Department of Health (NDDoH) Permit 0143, issued in 1992, and most recently renewed in 2017. The current landfill configuration is presented as **Figure 2**. The landfill is an engineered facility with a 2-foot clay liner, with geomembrane in the recently expanded area. The Glenharold Mine is a former lignite mining area containing surface mine spoils. A portion of this mine was graded, lined, and permitted to serve as a landfill for the storage of CCR materials. Leachate and contact runoff from the disposal area is collected in a pond located in the central portion of the landfill footprint.

1.4 Physical Setting

The Glenharold CCR Landfill is situated south of the Missouri River at an elevation of roughly 1950 feet above mean sea level (ft, amsl). The topography of the surrounding areas consists of alluvial terraces and historic mine spoils. Much of the surrounding mined areas have historically been developed such that precipitation outside of the landfill footprint is generally redirected as surface water runoff toward drainage ditches and culverts that drain to Alderin Creek and ultimately to the Missouri River **(Figure 2)**.

The geology at the Glenharold Landfill is generally comprised of approximately 50 feet of surface mine spoils underlain by the Sentinel Butte Formation. This formation is described as 1,000 feet or greater thickness of continental deposits consisting of dense clay, weakly cemented sandstone, and mudstone interlaced with lignite beds typically ranging between 5 and 10 feet thick.

The uppermost groundwater underlying the Glenharold CCR Landfill is found within the uppermost unmined lignite present within the Sentinel Butte Formation at depths ranging from 86 to 128, feet below ground surface (ft, bgs), equivalent to 1,819 to 1,843 ft, amsl. Uppermost groundwater generally flows north-northeast towards Alderin Creek and the Missouri River. A representative potentiometric surface map with groundwater elevations and direction of flow is presented on **Figure 3**.

Aquifer testing completed at monitoring wells MW-2016-4, MW-2016-8, and MW-2016-10 indicates an average hydraulic conductivity of 1.52×10^{-5} centimeters per second (cm/sec) for the saturated materials.

2.0 GROUNDWATER MONITORING AND CORRECTIVE ACTION PROCESS OVERVIEW

The regulatory process for groundwater monitoring and corrective action is established by Parts 257.90 through 257.98 of the CCR Rule**.** The process includes a phased approach to groundwater monitoring, leading (if applicable) to the establishment of groundwater protection standards (GWPSs) for each CCR unit. Exceedances of the GWPSs that are determined to be statistically significant can trigger requirements for additional groundwater characterization and corrective action assessment followed by corrective action implementation. The following paragraphs summarize the activities performed to date, and the activities planned for future years.

Groundwater monitoring is performed using a network of monitoring wells that includes both wells to monitor background water quality that is not potentially influenced by the presence of the CCR unit and wells placed at the downgradient boundary of waste disposal. **Table 1** presents the groundwater constituents by CCR rule Appendix and sampling program.

Table 1
CCR Monitoring Program Analytical Parameter List

Appendix III (Detection)	Appendix IV (Assessment)
pH	Antimony (Sb)
Total Dissolved Solids (TDS)	Arsenic (As)
Boron (B)	Barium (Ba)
Calcium (Ca)	Beryllium (Be)
Chloride (Cl)	Cadmium (Cd)
Fluoride (F)	Chromium (Cr)
Sulfate (SO_4)	Cobalt (Co)
	Fluoride (F)
	Lead (Pb)
	Lithium (Li)
	Mercury (Hg)
	Molybdenum (Mo)
	Selenium (Se)
	Thallium (Tl)
	Radium 226 and 228 (combined)

The first phase of groundwater monitoring is the detection-monitoring phase. This phase evaluates the groundwater quality based on the constituents listed in Appendix III of the CCR rule (**Table 1**). If statistically significant increases (SSIs) of any of the Appendix III constituents relative to background conditions are detected in the downgradient waste boundary wells, and cannot be demonstrated to be associated with a source other than the CCR unit, then groundwater monitoring moves into the second phase, assessment monitoring.

The second phase of groundwater monitoring focuses on the constituents listed in Appendix IV of the CCR rule (**Table 1**). Concentrations of Appendix IV constituents in downgradient wells are compared to GWPSs. The GWPSs, established for Appendix IV constituents, are the higher of either the federal Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) or the background concentration for each constituent.

If exceedance of a GWPS is identified in one or more downgradient boundary wells at statistically significant levels (SSLs), and no alternative sources for the exceedances can be demonstrated, then both additional groundwater characterization and assessment of corrective measures will be initiated. Following assessment of corrective measures, a remedy (or set of remedies) will be selected for the groundwater corrective action program for the CCR unit. According to the CCR rule, groundwater corrective action will continue until compliance with the GWPS has been attained in all impacted wells, and sustained for a period of 3 consecutive years.

The process described above relies on appropriate sampling locations (wells), baseline data and statistical methods to establish local background concentrations of the constituents in both Appendices III and IV, and to compare the concentrations in downgradient wells to background and/or MCLs. For each existing CCR unit that continued to receive CCR after October 2015, the rule requires that the following be performed prior to October 17, 2017, in order to support the process:

- Install and certify a groundwater monitoring system (GWMS) that is compliant with the rule, in the uppermost aquifer (and lower aquifers that are hydraulically interconnected to the uppermost aquifer) that underlies the unit; completed in 2017;

- Develop a groundwater sampling and analysis program, including selection of statistical procedures; completed in 2017;

- Collect and analyze a minimum of eight rounds of independent samples from the background and downgradient wells in the monitoring system; completed in 2017; and

- Begin evaluating the data to support detection monitoring for the Appendix III constituents; completed in 2017.

The following activities will be performed in calendar year 2018:

- Conduct semi-annual monitoring of groundwater for Appendix III constituents, for detection monitoring purposes;

- Perform statistical evaluations to determine if SSIs of the Appendix III constituents are detected in downgradient wells; and

- Conduct an Alternative Source Demonstration, if necessary, to evaluate whether the SSI constituent(s) can be attributed to a source other than the CCR unit.

3.0 GROUNDWATER ACTIVITIES IN 2016-2017

The following section summarizes the tasks completed in support of the CCR rule that begin in the spring of 2016 and continued through the summer of 2017, which consisted of the following activities:

- Monitoring Well Installation, Development, and Testing
    - Site review and preparation
    - Project safety and utilities
    - Well installation
    - Well development
    - Well hydraulic testing
- Monitoring Activities
    - Well sampling
    - Laboratory analysis
    - Preparation of the CCR Groundwater Monitoring System Report, dated October 17, 2017

3.1 Monitoring Well Installation, Development, and Testing

Eleven monitoring wells were installed between August 2 and November 21, 2016 by Cascade Drilling, LP (Cascade) in accordance with the Site Review and Recommendations Report provided to Basin Electric on October 16, 2015. Two of these wells, MW-2016-1 and MW-2016-7 were removed from the CCR monitoring network. MW-2016-1 was removed due to insufficient groundwater yields, and MW-2017-7 was removed because it was not hydraulically connected to the uppermost aquifer. Well locations are illustrated on **Figure 2**.

Aquifer testing was performed on August 22 and August 23, 2017 at monitoring wells MW-2016-4, MW-2016-8, and MW-2016-10. The results of the testing indicate a range of hydraulic conductivity within the uppermost aquifer ranging from 2.05E-6 to 2.22E-5 cm/sec.

The CCR Groundwater Monitoring System Report contains a complete record of the construction, development, and testing of the monitoring wells at the Glenharold CCR Landfill.

3.2 Monitoring Activities

Groundwater monitoring events for the reporting period include eight baseline detection monitoring events beginning with the first event in September 2016 and concluding with the eighth event in August 2017. Each event involved collection of representative samples from each a series of monitoring wells as detailed in the table below:

Table 2
Glenharold Landfill Groundwater Sampling Event Summary, 2016-2017

Event Date	Background Samples	Downgradient Samples	QA/QC Samples	Monitoring Mode
9/27/16	5	1	1	Detection
1/24/17	0	3	1	Detection
2/14/17	5	4	1	Detection
3/16/17	5	4	1	Detection
4/11/17	5	4	1	Detection
5/17/17	5	4	1	Detection
6/20/17	5	4	1	Detection
7/18/17	5	4	1	Detection
8/21/17	5	4	1	Detection
10/9/17	5	4	0	Detection
10/11/17	5	4	0	Detection

Each of these monitoring events was conducted in general accordance with procedures established in CCR Rule 257.93.

4.0 MONITORING SYSTEM EVALUATION

Wells are located in an aboveground locking steel casing set in a 2' X 2' concrete pad, and are protected by a minimum of three steel bollards. Well data sheets completed during the most recent sampling event completed August 23, 2017, noted all wells were in good condition with all dedicated sampling equipment in good working order.

Water level measurements collected during the period indicate a groundwater flow direction that was generally from the south-southwest to the north-northeast. This potentiometric surface was generally consistent for the background and downgradient monitoring of the CCR Landfill as presented in the CCR Groundwater Monitoring System Report, dated October 17, 2017. A representative potentiometric map depicting the typical surface elevation and direction of flow of the groundwater present within the uppermost aquifer at Glenharold Landfill is presented as **Figure 3**. The complete set of potentiometric maps are provided in the CCR Groundwater Monitoring System Report dated October 17, 2017, located in Basin Electric's Operating Record.

The hydrostratigraphic positions of the CCR program monitoring wells relative to the landfill for the 2016-2017 monitoring period are as follows:

- Background: MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, MW-2016-8
- Downgradient: MW-2016-2, MW-2016-9, MW-2016-10, MW-2016-11

5.0 MONITORING RESULTS

The data obtained during the baseline monitoring events is provided in the Sampling and Analysis Report presented herein as **Attachment A**. This report presents the results for each of the monitoring events of the reporting period including presentation of the potentiometric surface for the uppermost aquifer, groundwater flow direction, field measurements, and results of the laboratory analysis for Appendix III and IV parameters. The general chemistry of the groundwater samples collected is generally consistent with groundwater found within a lignite aquifer.

6.0 CCR PROGRAM SCHEDULE

The next monitoring event at Leland Olds Station Landfill will be for semiannual Detection Monitoring prior to mid-April 2018. This event will include the CCR rule Appendix III constituents for compliance with the detection monitoring phase of the CCR program. The results from this event will be evaluated for Statistically Significant Increase(s) in downgradient wells relative to background. If no SSI's are identified then Detection monitoring will continue on a semiannual basis. If an SSI is identified in a Detection Monitoring event the site will proceed with Assessment Monitoring for Appendix III and Appendix IV constituents and Alternative Source Demonstration.

7.0 STATISTICAL PROCEDURES AND RESULTS

The Appendix III groundwater quality data were evaluated using an interwell approach that statistically compares constituent concentrations at downgradient monitoring wells to those present at background monitoring wells. For Leland Olds Station, monitoring wells MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8 are designated as the background wells because they are located upgradient of the ash landfill, whereas the remaining monitoring wells (MW-2016-2, MW-2016-9, MW-2016-10, and MW-2016-11) are located downgradient of the facility.

Prediction limits (i.e., parametric or nonparametric) with retesting were developed for each constituent based on the frequency of non-detect values and whether the background data for that constituent exhibited a normal, lognormal, or nonparametric distribution. For the statistical analysis, non-detect values were represented as one-half the detection limit. Analytical data from the background monitoring wells collected between September 2016 and October 2017 were used to develop an upper prediction limit (UPL) for the Appendix III background data at 95 percent confidence. Data from the downgradient monitoring wells from the last monitoring event were compared to the UPL to identify statistically significant increases (SSIs) over background. Mann-Kendall trend analysis was used to identify statistically significant increasing trends for constituents with SSIs. ProUCL Version 5.1 was used to store the data and run the statistical analyses. The results of the analyses, including the UPLs, are provided in **Table 3**.

Table 3: Statistical Analysis Methods and Background Upper Prediction Limits

Parameter (Units)	Number of Samples	Percent Nondetects	Normal/ Lognormal Distribution?	Statistical Method	Background Limit
Boron (mg/L)	40	0	Yes/Yes	Parametric 95% UPL	0.31
Calcium (mg/L)	39	0	No/No	Nonparametric 95% UPL	23
Chloride (mg/L)	40	2.5	No/No	Nonparametric 95% UPL	40
Fluoride (mg/L)	39	54	No/No	Nonparametric 95% UPL	0.60
pH (std units)	50	0	Yes/Yes	Parametric 95% UPL	7.77
Sulfate (mg/L)	40	0	No/No	Nonparametric 95% UPL	750
TDS (mg/L)	40	0	No/No	Nonparametric 95% UPL	2,200

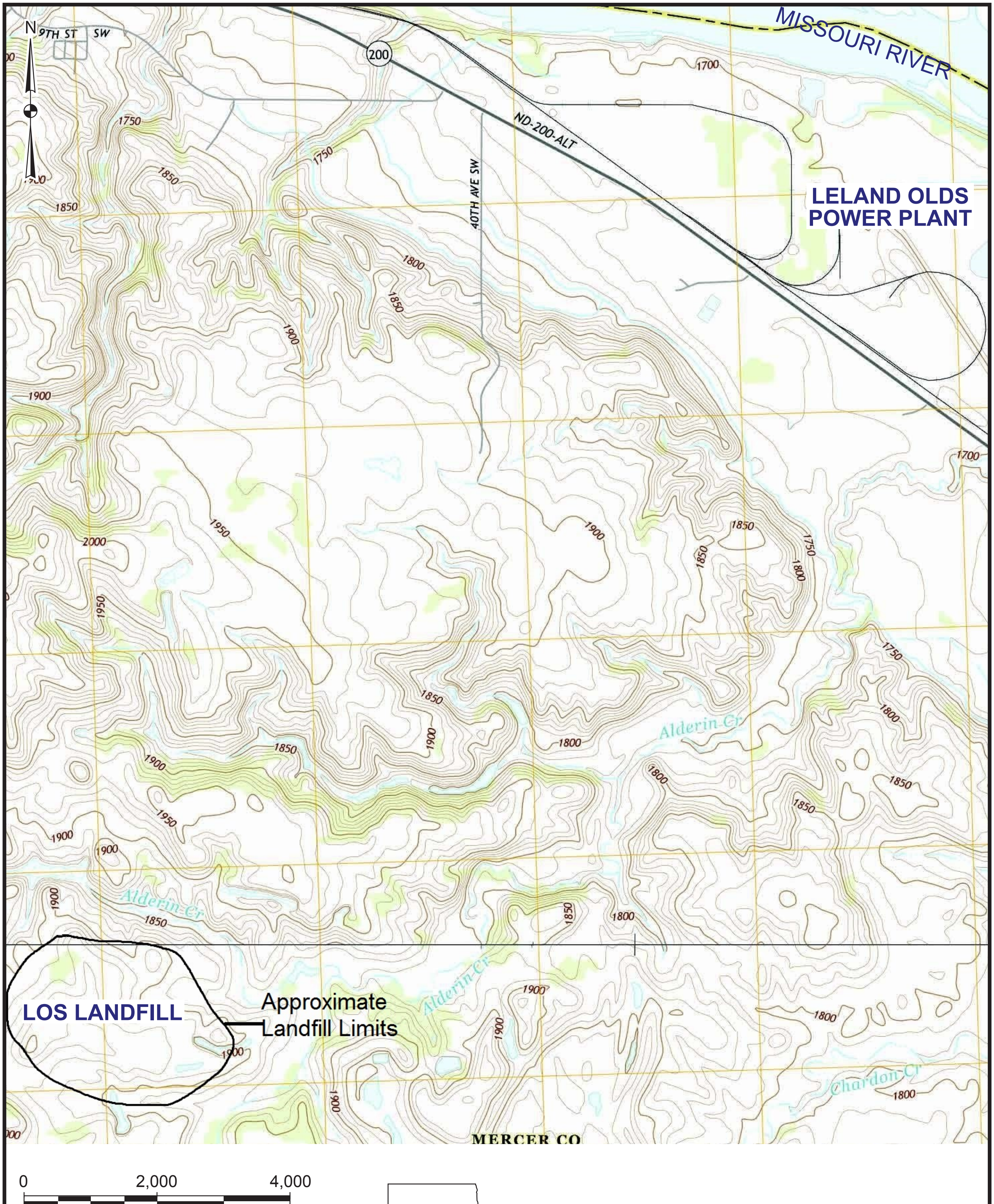
The statistical analysis results indicate that none of the Appendix III constituents had SSIs over background or statistically significant increasing trends in constituent concentrations. Based on these results, assessment monitoring is not required at Leland Olds Station.

8.0 SUMMARY AND CONCLUSIONS

AECOM, on behalf of Basin Electric, oversaw the installation of a groundwater monitoring network between August 2 and November 21, 2016. Eight groundwater sampling events were completed to evaluate the groundwater chemistry of the uppermost aquifer background and downgradient of the Glenharold Landfill. This data was obtained to establish baseline water quality for the CCR Rule Appendix III and Appendix IV constituents.

Statistical review of the baseline data has been completed with no SSIs identified. Detection Monitoring for the Appendix III constituents will be conducted within 90 days of this report.

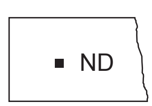
Figures



0 2,000 4,000

APPROXIMATE SCALE IN FEET

BASE MAP SOURCE: USGS 7½ minute topographic quadrangle maps: Hannover NE, North Dakota 2014; Stanton SE, North Dakota 2014.



Quadrangle Location

BASIN ELECTRIC POWER COOPERATIVE

FIGURE 1
SITE LOCATION MAP
LOS LANDFILL

JOB NO. 60514340

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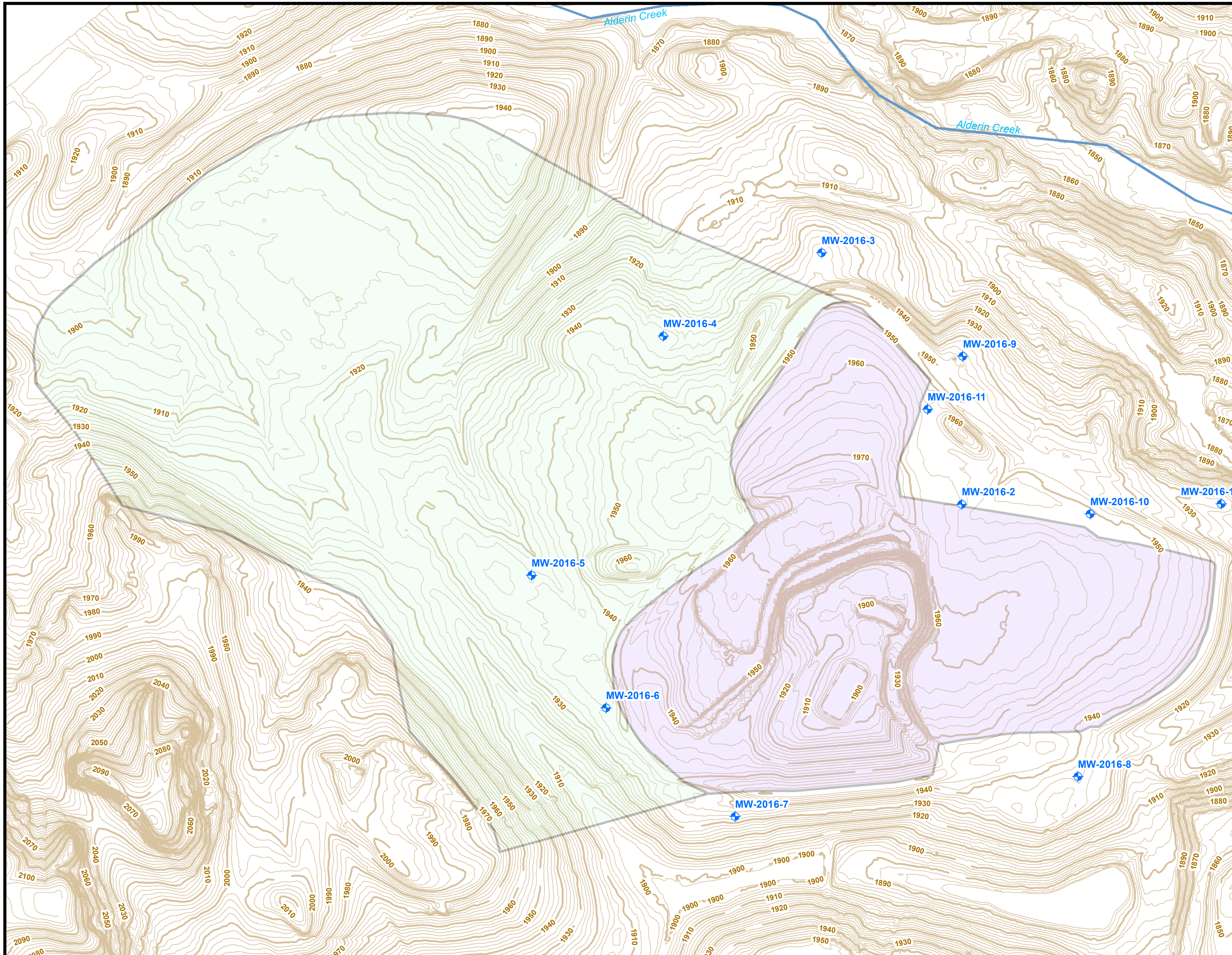


Legend

Monitoring Well

Existing Limits of Waste

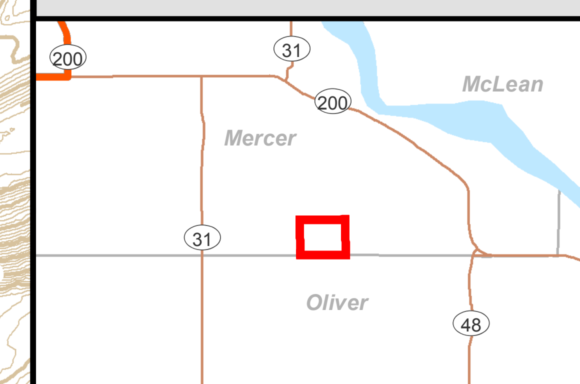
Expansion Limits of Waste

Surface Contours (2-foot interval)

N
W E
S

1 inch = 400 feet

0 0.05 0.1 Miles



BASIN ELECTRIC POWER COOPERATIVE
FIGURE 2
MONITORING WELL LOCATION MAP
LOS LANDFILL

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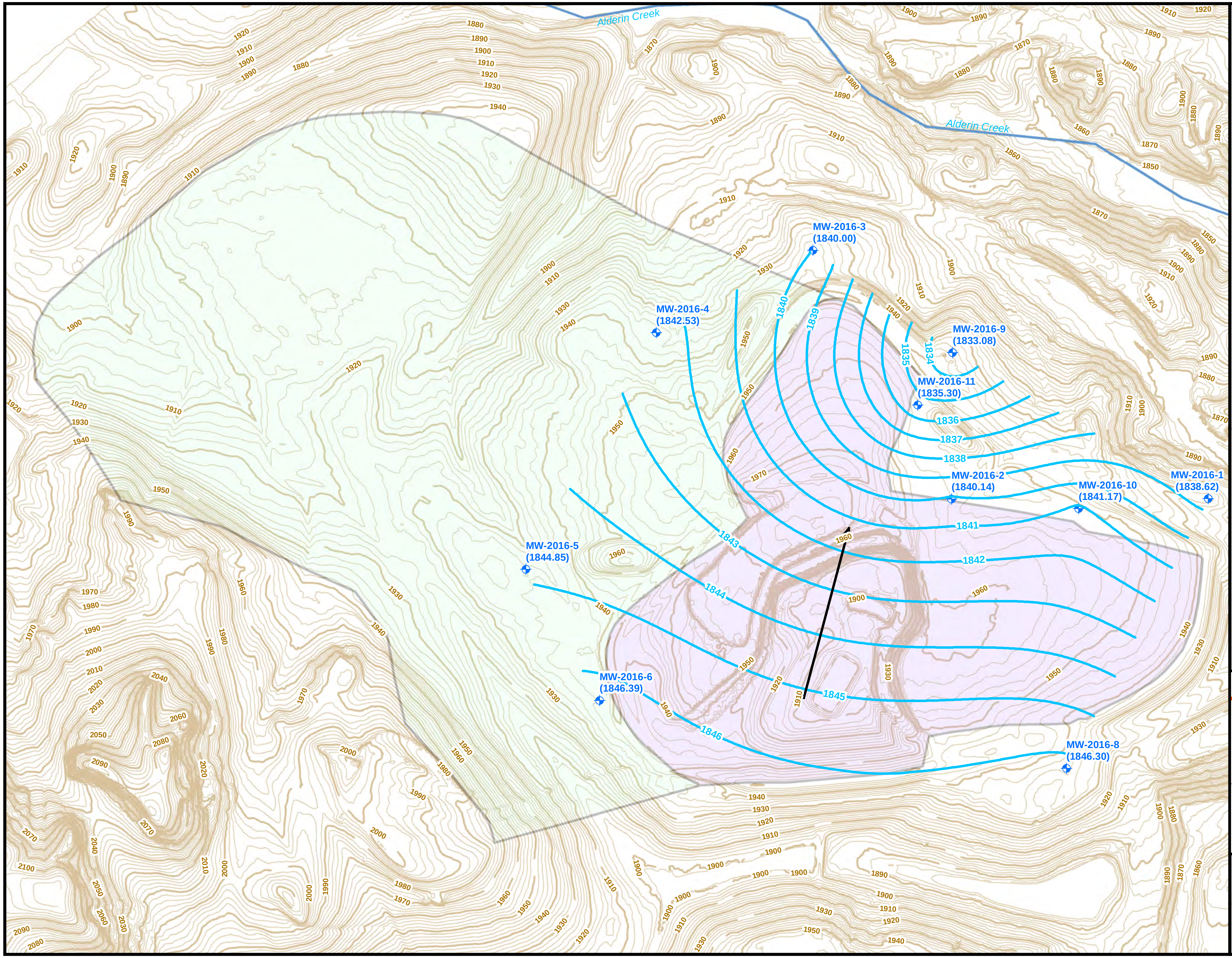


Legend

Potentiometric Surface Contour (1-foot interval) August 21, 2017 (3rd quarter)

Groundwater Flow Direction

Monitoring Wells

Existing Limits of Waste

Expansion Limits of Waste

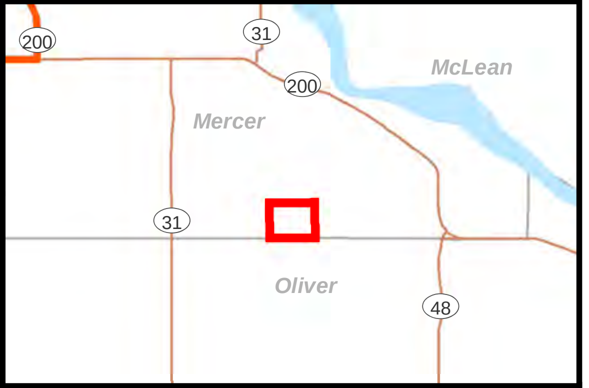
Surface Contours (2-foot interval)

NOTE: Groundwater elevations were obtained on August 21, 2017.

N
W E
S

1 inch = 400 feet

0 0.05 0.1 Miles



BASIN ELECTRIC POWER COOPERATIVE
FIGURE 3
REPRESENTATIVE POTENTIOMETRIC SURFACE MAP
AUGUST 2017
LOS LANDFILL

JOB NO. 60514340

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Attachments

Attachment A

Sampling and Analysis Report, 2016-2017

SAMPLING AND ANALYSIS REPORT CCR MONITORING PROGRAM

GLENHAROLD CCR LANDFILL
LELAND OLDS STATION
MERCER COUNTY, NORTH DAKOTA

January 23, 2018

Prepared For:

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CONTENTS

List of Appendices

1.0 INTRODUCTION

This Coal Combustion Residuals (CCR) groundwater Sampling and Analysis Report was developed by AECOM Technical Services, Inc. (AECOM) for the Basin Electric Power Cooperative (Basin Electric) Leland Olds Station (LOS) Glenharold CCR Landfill henceforth referred to as the Landfill.

This document was prepared to present the results of sampling and analysis of groundwater conducted for the monitoring requirements of the CCR rule (40 CFR 257.90 to 98); specifically, the data collected for the eight Baseline Monitoring events conducted prior to October 17, 2017.

2.0 GROUNDWATER FLOW

As required by 40 CFR 257.93(c), groundwater elevations were measured in each well immediately prior to purging, each time groundwater was sampled. The measurements, as presented in **Appendix I**, were used to create potentiometric surface maps for the uppermost aquifer for each of the monitoring events. The maps were used to evaluate the direction and rate of groundwater flow for the subject CCR unit as summarized on the table below. A representative potentiometric map is included here in **Appendix II**. The complete set of potentiometric maps are provided in the CCR Groundwater Monitoring System Report dated October 17, 2017, located in Basin Electric's Operating Record.

Table 1. Landfill Groundwater Gradient and Seepage Velocity

Date of event	d_l (ft)	d_h (ft)	i (ft/ft)	n_e	K (ft/day)	v_s (ft/day)
9/27/2016	680	4	5.88E-03	0.185	0.0344	1.09E-03
2/13/2017	680	3	4.41E-03	0.185	0.0344	8.20E-04
3/16/2017	600	4	6.67E-03	0.185	0.0344	1.24E-03
4/11/2017	600	3	5.00E-03	0.185	0.0344	9.30E-04
5/17/2017	920	4	4.35E-03	0.185	0.0344	8.08E-04
6/20/2017	880	4	4.55E-03	0.185	0.0344	8.45E-04
7/18/2017	960	6	6.25E-03	0.185	0.0344	1.16E-03
8/21/2017	960	5	5.21E-03	0.185	0.0344	9.68E-04

d_l = Horizontal separation between upgradient and downgradient locations perpendicular to potentiometric contours

d_h = Change in hydraulic head between upgradient and downgradient locations

i = Hydraulic gradient (change in elevation over distance)

n_e = Site average porosity of 18.5%

K = Site average hydraulic conductivity of 3.44 E-02 ft/day from slug and pumping tests at site

v_s = Seepage Velocity (ft/day)

Hydraulic Gradient Governing Equation[1] – $i = -{dh}/{dl}$

Seepage Velocity Governing Equation[2] – $v_s = {-K * i}/{n_e}$

1. In textbook form, d_h is a negative number as hydraulic head is reported as the higher value subtracted from the lower value.
2. Negative operation performed as in textbook form, hydraulic gradient is negative.

Based on the groundwater flow conditions documented in this section the relative function of the monitoring wells employed in the groundwater monitoring system is as follows:

Table 2. Landfill Monitoring System	
Background Wells	MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, MW-2016-8
Downgradient Wells	MW-2016-2, MW-2016-9, MW-2016-10, MW-2016-11

3.0 GROUNDWATER QUALITY

The groundwater quality data collected during the reporting period are included in laboratory reports located in Basin Electric's Operating Record. The laboratory reports were reviewed for completeness against the project-required methods and the chain-of-custody forms. Reports were also reviewed for holding times, and that the data was appropriately flagged based on the quality assurance/quality control (QA/QC) data provided. The validated results were then compiled into summary form contained in **Appendix III**.

Appendix I
Groundwater Elevations

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - SEPTEMBER 2016
FIRST BASELINE EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	September 27, 2016 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	94.97	1836.76
MW-2016-2	1957.977	121.99	1835.99
MW-2016-3	1939.881	100.04	1839.84
MW-2016-4	1939.973	96.96	1843.01
MW-2016-5	1937.538	92.24	1845.30
MW-2016-6	1939.312	92.29	1847.02
MW-2016-8	1939.361	93.21	1846.15
MW-2016-9	NA	NA	NA
MW-2016-10	NA	NA	NA
MW-2016-11	NA	NA	NA

NA = Measurements not available. Wells did not exist at this time.

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - JANUARY 2017
SUPPLEMENTAL EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	January 24, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	NA	NA
MW-2016-2	1957.977	NA	NA
MW-2016-3	1939.881	NA	NA
MW-2016-4	1939.973	NA	NA
MW-2016-5	1937.538	NA	NA
MW-2016-6	1939.312	NA	NA
MW-2016-8	1939.361	NA	NA
MW-2016-9	1947.392	109.22	1838.172
MW-2016-10	1953.315	112.10	1841.215
MW-2016-11	1956.73	117.26	1839.467

NA = Measurements not available

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - FEBRUARY 13, 2017
SECOND BASELINE EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	February 13, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	92.59	1839.14
MW-2016-2	1957.977	115.22	1842.76
MW-2016-3	1939.881	99.92	1839.96
MW-2016-4	1939.973	97.05	1842.92
MW-2016-5	1937.538	92.65	1844.89
MW-2016-6	1939.312	92.69	1846.62
MW-2016-8	1939.361	92.77	1846.59
MW-2016-9	1947.392	116.77	1830.62
MW-2016-10	1953.315	112.12	1841.20
MW-2016-11	1956.73	124.68	1832.05

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - MARCH 15, 2017
THIRD SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	March 15, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	93.04	1838.69
MW-2016-2	1957.977	123.02	1834.96
MW-2016-3	1939.881	100.27	1839.61
MW-2016-4	1939.973	96.72	1843.25
MW-2016-5	1937.538	92.20	1845.34
MW-2016-6	1939.312	92.58	1846.73
MW-2016-8	1939.361	92.66	1846.70
MW-2016-9	1947.392	113.65	1833.74
MW-2016-10	1953.315	111.60	1841.72
MW-2016-11	1956.73	123.05	1833.68

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - APRIL 10, 2017
FOURTH SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	April 10, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	92.94	1838.79
MW-2016-2	1957.977	118.36	1839.62
MW-2016-3	1939.881	99.73	1840.15
MW-2016-4	1939.973	96.50	1843.47
MW-2016-5	1937.538	92.10	1845.44
MW-2016-6	1939.312	92.45	1846.86
MW-2016-8	1939.361	92.36	1847.00
MW-2016-9	1947.392	113.57	1833.82
MW-2016-10	1953.315	111.20	1842.12
MW-2016-11	1956.73	122.60	1834.13

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - May 17, 2017
FIFTH SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	May 17, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	92.55	1839.18
MW-2016-2	1957.977	116.32	1841.66
MW-2016-3	1939.881	99.85	1840.03
MW-2016-4	1939.973	96.57	1843.40
MW-2016-5	1937.538	91.99	1845.55
MW-2016-6	1939.312	92.26	1847.05
MW-2016-8	1939.361	92.62	1846.74
MW-2016-9	1947.392	111.30	1836.09
MW-2016-10	1953.315	111.56	1841.76
MW-2016-11	1956.73	119.91	1836.82

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - June 20, 2017
SIXTH SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	June 20, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	92.70	1839.03
MW-2016-2	1957.977	116.26	1841.72
MW-2016-3	1939.881	100.13	1839.75
MW-2016-4	1939.973	96.71	1843.26
MW-2016-5	1937.538	92.03	1845.51
MW-2016-6	1939.312	92.24	1847.07
MW-2016-8	1939.361	92.71	1846.65
MW-2016-9	1947.392	113.43	1833.96
MW-2016-10	1953.315	111.69	1841.63
MW-2016-11	1956.73	121.12	1835.61

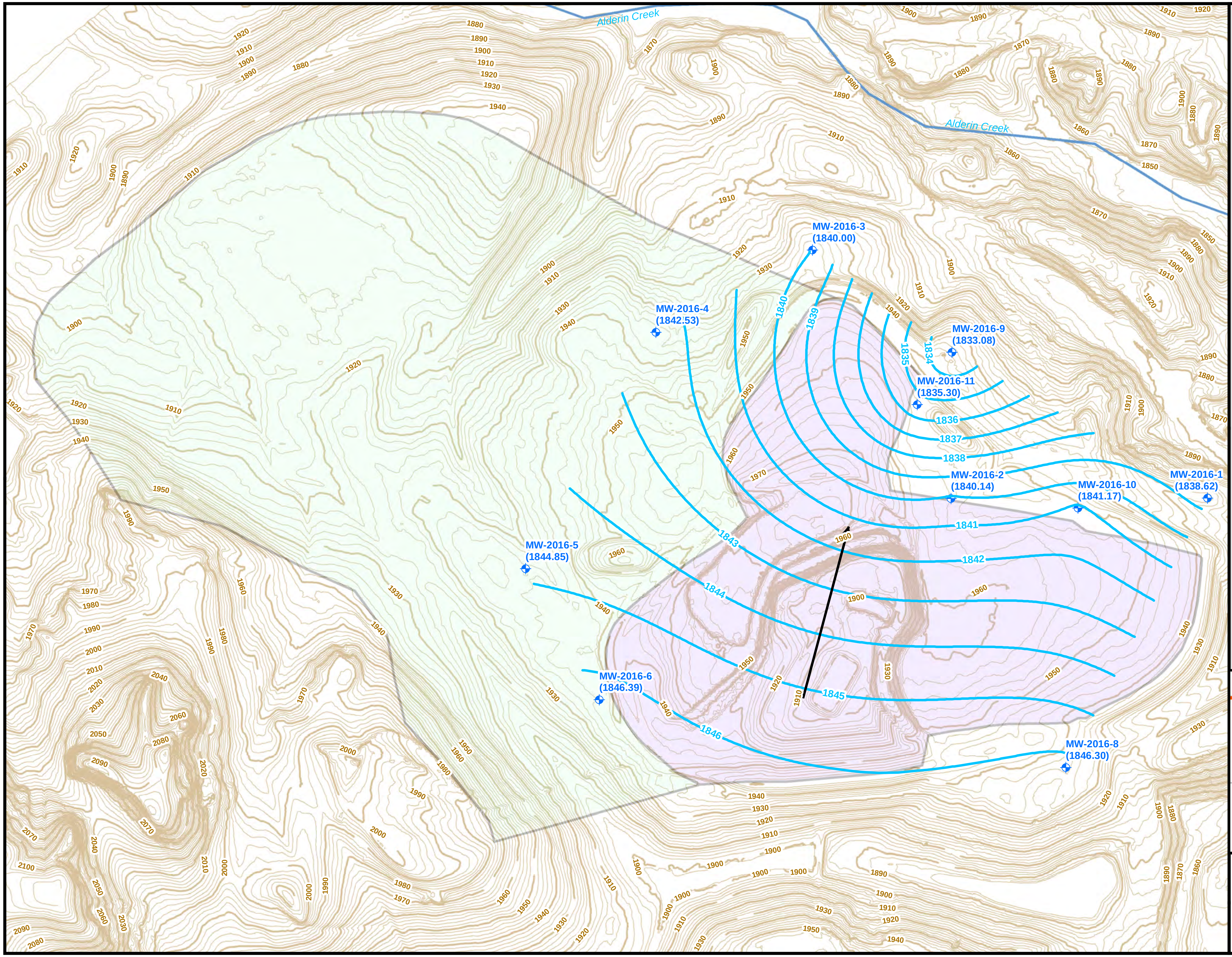
GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - July 18, 2017
SEVENTH SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	July 18, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	93.20	1838.53
MW-2016-2	1957.977	118.18	1839.80
MW-2016-3	1939.881	100.66	1839.22
MW-2016-4	1939.973	97.12	1842.85
MW-2016-5	1937.538	92.44	1845.10
MW-2016-6	1939.312	92.70	1846.61
MW-2016-8	1939.361	92.97	1846.39
MW-2016-9	1947.392	115.69	1831.70
MW-2016-10	1953.315	112.03	1841.29
MW-2016-11	1956.73	123.09	1833.64

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS - August 21, 2017
EIGHTH SAMPLING EVENT
LELAND OLDS STATION - STANTON, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	August 21, 2017 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-1	1931.725	93.11	1838.62
MW-2016-2	1957.977	117.84	1840.14
MW-2016-3	1939.881	99.88	1840.00
MW-2016-4	1939.973	97.44	1842.53
MW-2016-5	1937.538	92.69	1844.85
MW-2016-6	1939.312	92.92	1846.39
MW-2016-8	1939.361	93.06	1846.30
MW-2016-9	1947.392	114.31	1833.08
MW-2016-10	1953.315	112.15	1841.17
MW-2016-11	1956.73	121.43	1835.30

Appendix II
Representative Potentiometric Surface Map



Legend

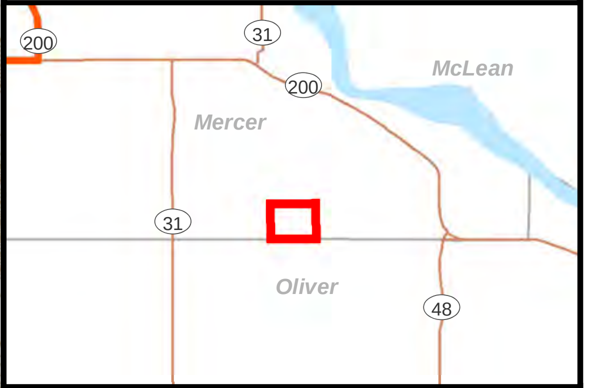
- Potentiometric Surface Contour (1-foot interval) August 21, 2017 (3rd quarter)
- Groundwater Flow Direction
- Monitoring Wells
- Existing Limits of Waste
- Expansion Limits of Waste
- Surface Contours (2-foot interval)

NOTE: Groundwater elevations were obtained on August 21, 2017.

N
W E
S

1 inch = 400 feet

0 0.05 0.1 Miles



BASIN ELECTRIC POWER COOPERATIVE
REPRESENTATIVE POTENTIOMETRIC SURFACE MAP
AUGUST 2017
LOS LANDFILL

JOB NO. 60514340

AECOM

Appendix III
Analytical Results Summary

			Appendix III Constituents										Appendix IV Constituents																													
			Boron	Calcium	Chloride		Fluoride		pH	Sulfate		TDS	Antimony		Arsenic		Barium		Beryllium		Cadmium		Chromium		Cobalt		Fluoride		Lead		Lithium		Mercury		Molybdenum		Selenium		Thallium		Radium 226/228	
Analyte Name			mg/L	mg/L	mg/L		mg/L		S.U.	mg/L		mg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		mg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		pCi/L	
Downgradient	MW-2016-1	1	0.30	39	18		0.50	U	NA	310		1200	2.0	U	12		450		1.7		1.0		120		16		0.50	U	23		20	U	0.2	U	32		5.0	U	1.0	U	NA	
		2	0.31	19	19		0.50	U	NA	390		1900	2.0	U	5.0	U	110		1.0	U	1.0	U	13		2.4		0.50	U	2.4		20	U	0.20	U	26		5.0	U	1.0	U	3.28	
		3	0.33	18	NA		NA		NA	NA		NA	2.0	U	5.0	U	80		1.0	U	1.0	U	10		2.0		NA		1.9		20	U	0.20	U	20	U	5.0	U	1.0	U	0.561	U
		4	0.34	20	19		0.50	U	7.61	350		NA	2.0	U	5.0	U	240		1.0	U	1.0	U	48		6.8		0.50	U	10		20	U	0.20	U	20	U	5.0	U	1.0	U	5.06	
		5	0.30	12	19		0.50	U	7.42	340		2000	2.0	U	5.0	U	71		1.0	U	1.0	U	2.6		1.0	U	0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.608	
		6	0.32	12	18	1	0.50	U 1	7.14	360	1	1900	2.0	U	5.0	U	87		1.0	U	1.0	U	7.9		1.5		0.50	U 1	2.8		21		0.20	U	20	U	5.0	U	1.0	U	2.11	
		7	0.30	11	17	2	0.50	U 2	7.13	330	2	1900	14		5.0	U	81		1.0	U	1.0	U	3.2		1.0	U	0.50	U 2	1.0	U	25		0.20	U	20	U	5.0	U	1.0	U	2.43	
		8	0.32	10	18	H	0.50	U H	6.76	360	H	1900	2.0	U	5.0	U	74		1.0	U	1.0	U	4.3		1.0	U	0.50	U H	1.0	U	23		0.20	U	20	U	5.0	U	1.0	U	7.20	
	MW-2016-2	1	0.30	25	12		0.50	U	7.56	420		1500	2.0	U	5.0	U	100		1.0	U	1.0	U	8.3		1.7		0.50	U	1.6		20	U	0.2	U	35		5.0	U	1.0	U	2.980	
		2	0.28	17	12		0.55		NA	460		1900	2.0	U	5.0	U	79		1.0	U	1.0	U	9.1		4.9		0.55		2.2		20	U	0.20	U	32		5.0	U	1.0	U	7.20	
		3	0.30	13	15	U	2.50	U	NA	520		2000	2.0	U	5.0	U	74		1.0	U	1.0	U	7.2		2.1		2.50	U	1.3		20	U	0.20	U	20	U	5.0	U	1.0	U	1.410	
		4	0.30	13	11		0.50	U	7.31	540		2000	2.0	U	5.0	U	120		1.0	U	1.0	U	24.0		3.5		0.50	U	3.7		20	U	0.20	U	21		5.0	U	1.0	U	2.51	
		5	0.27	9.5	8.1		0.50	U	7.32	550		1900	2.0	U	5.0	U	37		1.0	U	1.0	U	2.8		1.0	U	0.50	U	1.0	U	37		0.20	U	20	U	5.0	U	1.0	U	0.258	U
		6	0.29	13	8.5	1	0.50	U 1	7.59	520	1	1900	2.0	U	5.0	U	94		1.0	U	1.0	U	8.8		1.7		0.50	U 1	1.2		20	U	0.20	U	20	U	5.0	U	1.0	U	0.241	U
		7	0.26	11	9.1	2	0.50	U 2	7.67	470		1900	14		5.0	U	60		1.0	U	1.0	U	3.2		1.0	U	0.50	U 2	1.0	U	23		0.20	U	20	U	5.0	U	1.0	U	0.284	U
		8	0.29	10	8.8	H	0.50	H	7.4	530	H	1700	2.0	U	5.0	U	53		1.0	U	1.0	U	2.7		1.0	U	0.50	U	1.0	U	20	U	1.20	U	20	U	5.0	U	1.0	U	0.573	
	MW-2016-9	1	NA	NA	NA		NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
		1 SUPP	0.31	19	19		0.50		7.47	270		2300	2.0	U	5.0	U	68		1.0	U	1.0	U	2.0	U	1.0	U	0.50		1.0	U	20	U	0.20	U	69		5.0	U	1.0	U	0.049	U
		2	0.27	13	18		0.51		7.45	320		1700	2.0	U	5.0	U	72		1.0	U	1.0	U	6.5		1.5		0.51		1.2		21		0.20	U	61		5.0	U	1.0	U	0.908	U
		3	0.29	13	18		0.50	U	7.58	310		1800	2.0	U	5.0	U	110		1.0	U	1.0	U	23		4.2		0.50	U	2.8		28		0.20	U	51		5.0	U	1.0	U	1.46	
		4	0.27	9.0	18		0.54		7.35	310		1700	2.0	U	5.0	U	62		1.0	U	1.0	U	4.4		1.1		0.54		1.0	U	29		0.20	U	30		5.0	U	1.0	U	0.855	U
		5	0.26	9.7	15		0.50	U	7.41	310		1700	2.0	U	5.0	U	81		1.0	U	1.0	U	9.7		1.8		0.50	U	1.3		24		0.20	U	37		5.0	U	1.0	U	0.788	
		6	0.26	7.6	16	1	0.50	U 1	7.84	340	1	1600	2.0	U	5.0	U	59		1.0	U	1.0	U	3.0		1.0	U	0.50	U 1	1.0	U	32		0.20	U	22		5.0	U	1.0	U	0.43	U
		7	0.25	7.5	16	2	0.51	2	7.5	300	2	1700	2.0	U	5.0	U	61		1.0	U	1.0	U	4.7		1.0		0.51	2	1.0	U	32		0.20	U	20	U	5.0	U	1.0	U	0.14	U
		8	0.27	7.5	16	H	0.53	H	7.41	360	H	1600	2.0	U	5.0	U	63		1.0	U	1.0	U	6.3		1.1		0.53	H	1.0	U	28		0.20	U	20	U	5.0	U	1.0	U	1.47	
	MW-2016-10	1	NA	NA	NA		NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
		1 SUPP	0.22	20	17		0.60		7.66	300		1700	2.0	U	5.0	U	73		1.0	U	1.0	U	2.0	U	1.0	U	0.60		1.0	U	20	U	0.20	U	59		5.0	U	1.0	U	0.505	
		2	0.23	6.8	17		0.60		7.77	290		1700	2.0	U	5.0	U	63		1.0	U	1.0	U	2.0	U	1.0	U	0.60		1.0	U	39		0.20	U	20	U	5.0	U	1.0	U	0.8290	
		3	0.23	7.5	15		0.55		7.65	310		1700	2.0	U	5.0	U	57		1.0	U	1.0	U	2.0	U	1.0	U	0.55		1.0	U	35		0.20	U	20	U	5.0	U	1.0	U	0.424	
		4	0.24	12	16		0.62		7.52	270		1800	2.0	U	5.0	U	58		1.0	U	1.0	U	2.0	U	1.0	U	0.62		1.0	U	20	U	0.20	U	46		5.0	U	1.0	U	0.317	U
		5	0.23	7.7	15		0.54		7.87	240		1700	2.0	U	5.0	U	50		1.0	U	1.0	U	2.0	U	1.0	U	0.54		1.0	U	34		0.20	U	20	U	5.0	U	1.0	U	0.67	
		6	0.23	11	16	1	0.53	1	7.33	260	1	1700	2.0	U	5.0	U	61	F1	1.0	U	1.0	U	2.0	U	1.0	U	0.53	1	1.0	U	20	U	0.20	U	40		5.0	U	1.0	U	0.357	
		7	0.22	7.6	15	2	0.60	2	7.23	220	2	1700	2.0	U	5.0	U	52		1.0	U	1.0	U	2.0	U	1.0	U	0.60	2	1.0	U	29		0.20	U	20	U	5.0	U	1.0	U	0.279	U
		8	0.24	7.5	16	H	0.62	H	7.39	260	H	1600	2.0	U	5.0	U	47		1.0	U	1.0	U	2.0	U	1.0	U	0.62	H	1.0	U	28		0.20	U	20	U	5.0	U	1.0	U	0.635	
	MW-2016-11	1	NA	NA	NA		NA		NA	NA		NA	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
		1 SUPP	0.28	36	18		0.54		7.59	260		1600	2.0	U	5.0	U	170		1.0	U	1.0	U	20		2.9		0.54		4.7		20	U	0.20	U	73		5.0	U	1.0	U	1.26	
		2	0.31	29	18		0.53		7.6	280		2400	2.0	U	8.6		370		1.5		1.0	U	90		12		0.53		16		23		0.20	U	66		5.0	U	1.0	U	3.05	
		3	0.29	13	17		2.50	U	7.61	290		1900	2.0	U	5.0	U	140		1.0	U	1.0	U	27		4.5		2.50	U	4.7		32		0.20	U	30		5.0	U	1.0	U	2.54	
		4	0.28	10	18		0.57		7.43	290		1600	2.0	U	5.0	U	110		1.0	U	1.0	U	19		3.3		0.57		3.6		34		0.20	U	20	U	5.0	U	1.0	U	3.27	
		5	0.30	12	15		0.50	U	7.05	250		2100	2.0	U	5.0	U	110		1.0	U	1.0	U	20		3.1		0.50	U	3.4		20		0.20	U	39		5.0	U	1.0	U	0.516	U
		6	0.32	11	16	1	0.50	U 1	7.62	270	1	1600	2.0	U	5.0	U	72		1.0	U	1.0	U	8.4		1.6		0.50	U 1	2.0		20	U	0.20	U	42		5.0	U	1.0	U	0.108	U
		7	0.28	9.3	17	2	0.51	2	7.66	260	2	1600	2.0	U	5.0	U	63		1.0	U	1.0	U	6.8		1.2		0.51	2	1.3		20	U	0.20	U	30		5.0	U	1.0	U	0.283	
		8	0.30	8.4	17	H	0.52	H	7.48	280	H	1500	2.0	U	5.0	U	50		1.0	U	1.0	U	4.2		1.0	U	0.52	H	1.0	U	26		0.20	U	20		5.0	U	1.0	U	0.421	U
Background	MW-2016-3	1	0.27	23	35		0.50	U	7.42	100		1400	2.0	U	5.0	U	81		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	20	U	0.2	U	32		5.0	U	1.0	U	0.399	
		2	0.22	22	37		0.50		7.59	74		1500	2.0	U	5.0	U	110		1.0	U	1.0	U	12		2.3		0.50		2.3		20	U	0.20	U	36		5.0	U	1.0	U	0.624	U
		3	0.26	15	36		0.56		7.83	59		1500	2.0	U	5.0	U	82		1.0	U	1.0	U	13.0		2.2		0.56		2.7		20	U	0.20	U	33		5.0	U	1.0	U	0.574	U
		4	0.29	12	39		0.57		7.58	59		1500	2.0	U	5.0	U	48		1.0	U	1.0	U	3.2		1.0	U	0.57		1.0	U	20	U	0.20	U	38		5.0	U	1.0	U	0.134	U
		5	0.26	13	33		0.50	U	7.46	78		1800	2.0	U	5.0	U	66		1.0	U	1.0	U	8.9		1.8		0.50	U	2.0		20	U	0.20	U	26		5.0	U	1.0	U	0.469	U
		6	0.25	10	41	1	0.54	1	7.64	47	1	1500	2.0	U	5.0	U	65		1.0	U	1.0	U	9.2		1.9		0.54	1	1.6		20	U	0.20	U	27		5.0	U	1.0	U	0.642	U
		7	0.24	9.7	40	2	0.58	2	7.54	50	2	1600	2.0	U	5.0	U	59		1.0	U	1.0	U	6.2		1.5		0.58	2	1.1		20	U	0.20	U	21		5.0	U	1.0	U	1.010	
		8	0.25	8.4	37	H	0.60	H	7.41	51	H	1400	2.0	U	5.0	U	43		1.0	U	1.0	U	3.5		1.0		0.60	H	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.763	
	MW-2016-4	1	0.24	11	18		0.58		7.49	370		1700	2.0	U	5.00	U	93		1.0	U	1.0	U	2	U	1.0	U	0.58		1.0	U	49		0.2	U	20	U	5.0	U	1.0	U	0.371	U
		2	0.23	9.9	19		0.63		7.61	370		1700	2.0	U	5.0	U	88		1.0	U	1.0	U	3.3		1.0	U	0.63		1.0	U	33		0.20	U	20	U	5.0	U	1.0	U	0.435	U
		3	0.22	10	20		0.58		7.59	360		1700	2.0	U	5.0	U	67		1.0	U	1.0	U	2.0	U	1.0	U	0.58		1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.213	U
		4	0.25	9.5	20		0.60		7.41	370		1700	2.0	U	5.0	U	63		1.0	U	1.0	U	2.0	U	1.0	U	0.60		1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.336	U
		5	0.23	8.5	17		0.54		7.36	350		1700	2.0	U	5.0	U	61		1.0	U	1.0	U	2.0	U	1.0	U	0.54		1.0	U	27		0.20	U	20	U	5.0	U	1.0	U	0.274	U
		6	0.24	8.1	18	1	0.56	1	7.31	360	1	1700	2.0	U	5.0	U	58		1.0	U	1.0	U	2.0	U	1.0	U	0.56	1	1.0	U	24		0.20	U	20	U	5.0	U	1.0	U	0.162	U
		7	0.22	10	18	2	0.57	2	7.27	320	2	1700	2.0	U	5.0	U	62		1.0	U	1.0	U	2.0	U	1.0	U	0.57	2	1.0	U	25		0.20	U	20	U	5.0	U	1.0	U	0.310	U
		8	0.25	9.7	19	H	0.58	H	7.24	360	H	1600	2.0	U	5.0	U	62		1.0	U	1.0	U	2.0	U	1.0	U	0.58	H	1.0	U	49		0.20	U	20	U	5.0	U	1.0	U	0.841	
	MW-2016-5	1	0.24	23	7.9		0.50	U	7.93	600		1700	2.0	U	5.00	U	97		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	20	U	0.2	U	20	U	5.0	U	1.0	U	0.437	
		2	0.24	18	8.8		0.52		7.51	600		1900	2.0	U	5.0	U	120		1.0	U	1.0	U	5.2		1.3		0.52		1.6		20	U	0.20	U	20	U	5.0	U	1.0	U	1.010	
		3	0.25	13	8.2		0.50	U	7.53	590		1800	2.0	U	5.0	U	53		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.534	
		4	0.25	12	7.9		0.55		7.32	610		1700	2.0	U	5.0	U	51		1.0	U	1.0	U	2.0	U	1.0	U	0.55		1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.156	U
		5	0.25	11	6.2		0.50	U	7.22	590		1900	2.0	U	5.0	U	43		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.170	U
		6	0.25	9.9	7.2	1	0.50	U 1	7.32	620	1	1900	2.0	U	5.0	U	43		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U 1	1.0	U	21		0.20	U	20	U	5.0	U	1.0	U	0.425	
		7	0.23	9.8	6.5	2	0.54	2	7.36	610	2	1900	2.0	U	5.0	U	41		1.0	U	1.0	U	2.0	U	1.0	U	0.54	2	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.267	U
		8	0.24	9.9	7.3	H	0.56	H	7.45	630	H	1700	2.0	U	5.0	U	37		1.0	U	1.0	U	2.0	U	1.0	U	0.56	H	1.0	U	23		0.20	U	20	U	5.0	U	1.0	U	0.650	

Analyte Name			Boron	Calcium	Chloride		Fluoride		pH	Sulfate		TDS
			Appendix III Constituents									
			mg/L	mg/L	mg/L		mg/L		S.U.	mg/L		mg/L
Background	MW-2016-6	1	0.21	43	9.1		0.50		7.69	520		1500
Background	MW-2016-6	2	0.27	16	6.3		0.50	U	7.55	730		2100
Background	MW-2016-6	3	0.29	13	15	U	2.50	U	7.58	740		2100
Background	MW-2016-6	4	0.29	12	5.8		0.50	U	7.67	770		2200
Background	MW-2016-6	5	0.27	13	4.7		0.50	U	7.39	730		2100
Background	MW-2016-6	6	0.27	12	5.9	1	0.50	U 1	7.52	710	1	2100
Background	MW-2016-6	7	0.24	11	5.1	2	0.50	U 2	7.53	720	2	2100
Background	MW-2016-6	8	0.27	11	5.9	H	0.50	U H	7.49	750	H	2000
Background	MW-2016-8	1	0.25	20	9		0.50	U	7.82	700		2200
Background	MW-2016-8	2	0.26	22	9.2		0.50	U	7.52	730		2200
Background	MW-2016-8	3	0.27	15	8.7		0.50	U	7.52	710		2200
Background	MW-2016-8	4	0.27	14	8.7		0.50	U	7.25	740		2200
Background	MW-2016-8	5	0.25	11	8		0.50	U	7.87	710		2200
Background	MW-2016-8	6	0.25	13	8.8	1	0.50	U 1	7.51	700	1	2200
Background	MW-2016-8	7	0.24	13	7.9	2	0.50	U 2	7.36	700	2	2300
Background	MW-2016-8	8	0.26	16	8.7	H	0.50	U H	7.49	720	H	2100

Analyte Name			Antimony		Arsenic		Barium		Beryllium		Cadmium		Chromium		Cobalt		Fluoride		Lead		Lithium		Mercury		Molybdenum		Selenium		Thallium		Radium 226/228	
			Appendix IV Constituents																													
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		mg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		pCi/L	
Background	MW-2016-6	1	2.0	U	5.00	U	150		1.0	U	1.0	U	3.2		1.0	U	0.50		1.0	U	20	U	0.2	U	28		5.0	U	1.0	U	1.09	
Background	MW-2016-6	2	2.0	U	5.0	U	66		1.0	U	1.0	U	2.0		1.0	U	0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.290	U
Background	MW-2016-6	3	2.0	U	5.0	U	55		1.0	U	1.0	U	2.0		1.0	U	2.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.688	
Background	MW-2016-6	4	2.0	U	5.0	U	66		1.0	U	1.0	U	3.5		1.0	U	0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.246	U
Background	MW-2016-6	5	2.0	U	5.0	U	74		1.0	U	1.0	U	5.4		1.2		0.50	U	1.0	U	29		0.20	U	20	U	5.0	U	1.0	U	0.373	U
Background	MW-2016-6	6	2.0	U	5.0	U	79		1.0	U	1.0	U	7.0		1.8		0.50	U 1	1.0	U	25		0.20	U	20	U	5.0	U	1.0	U	0.133	U
Background	MW-2016-6	7	2.0	U	5.0	U	58		1.0	U	1.0	U	2.7		1.0	U	0.50	U 2	1.0	U	32		0.20	U	20	U	5.0	U	1.0	U	0.517	
Background	MW-2016-6	8	2.0	U	5.0	U	57		1.0	U	1.0	U	2.8		1.0	U	0.50	U H	1.0	U	43		0.20	U	20	U	5.0	U	1.0	U	1.120	
Background	MW-2016-8	1	2.0	U	5.00	U	94	F1	1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	32		0.2	U	20	U	25.0	U	1.0	U	0.556	
Background	MW-2016-8	2	2.0	U	5.0	U	87		1.0	U	1.0	U	2.8		1.1		0.50	U	1.0	U	20	U	0.20	U	20	U	5.0	U	1.0	U	0.242	U
Background	MW-2016-8	3	2.0	U	5.0	U	55		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	45		0.20	U	20	U	5.0	U	1.0	U	0.179	U
Background	MW-2016-8	4	2.0	U	5.0	U	52		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	43		0.20	U	20	U	5.0	U	1.0	U	0.257	U
Background	MW-2016-8	5	2.0	U	5.0	U	51		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U	1.0	U	47		0.20	U	20	U	5.0	U	1.0	U	0.237	U
Background	MW-2016-8	6	2.0	U	5.0	U	55		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U 1	1.0	U	48		0.20	U	20	U	5.0	U	1.0	U	0.053	U
Background	MW-2016-8	7	2.0	U	5.0	U	50		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U 2	1.0	U	47		0.20	U	20	U	5.0	U	1.0	U	0.251	U
Background	MW-2016-8	8	2.0	U	5.0	U	57		1.0	U	1.0	U	2.0	U	1.0	U	0.50	U H	1.0	U	35		0.20	U	20	U	5.0	U	1.0	U	0.917	

TDS = Total Dissolved Solids
µg/L = micrograms per liter
mg/L = milligrams per liter
S.U. = Standard Units
pCi/L = picoCurie/liter
U = Analyte analyzed for but not detected
F1 = MS and/or MSD Recovery is outside acceptance limits
1 = Data collected on 10-9-17 to fill data gap during original sampling event #6
2 = Data collected 10-11 to 10-12-17 to fill data gap during original sampling event #7
H = Sample was prepped or analyzed beyond the specified holding time
NA = Not sampled or analyzed for