2018 Annual Groundwater Monitoring and Corrective Action Report

Antelope Valley Station
Beulah, North Dakota

Basin Electric Power Cooperative

January 30, 2019

Project #60570072

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List of Acronyms

AVS	Antelope Valley Station
bgs	below ground surface
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FGD	Flue Gas Desulfurization
ft	feet
ft/d	feet per day
GWMS	groundwater monitoring system
GWPS	groundwater protection standard
MCL	maximum contaminant level
MW	megawatt
RCRA	Resource Conservation and Recovery Act
SSI	statistically significant increase
SSL	statistically significant level
TDS	total dissolved solids
UPL	upper prediction limit
USGS	U.S. Geological Survey

1. Introduction

On behalf of Basin Electric Power Cooperative, (Basin), AECOM prepared the 2018 annual report documenting groundwater monitoring and corrective action for the Coal Combustion Residuals (CCR) units at Basin's Antelope Valley Station (AVS).

Chapter 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. Chapter 2.0 summarizes CCR groundwater monitoring activities conducted prior to 2018. Chapter 3.0 summarizes the groundwater monitoring and corrective action activities completed in 2016 and 2017, and references attachments to this report that contain detailed documentation of those activities. Chapter 4.0 provides an evaluation of the condition of the groundwater monitoring system. Chapter 5.0 summarizes the groundwater sampling and analysis conducted during the reporting period. Chapter 6.0 reviews the methods and results of statistical analysis of the groundwater monitoring data. Chapter 7.0 presents a summary and conclusions from the CCR groundwater monitoring in 2016-2017 and statistical analysis of the results. Chapter 8.0 lists references cited in this report.

Regulatory Background

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 second annual report, and includes activities performed in calendar year 2018.

Facility Location and Operational History

AVS is a coal-based generating station located north of Beulah, North Dakota (**Figure 1**). The plant consists of two power generating units with a total power output capacity of 900 megawatts (MW):

- Unit 1, with a rating of 450 MW, which began operating in 1984;
- Unit 2, with a rating of 450 net MW, which began operating in 1986; and

CCR produced at AVS includes fly ash, bottom ash, and flue gas desulfurization (FGD) waste.

CCR Unit Description

Coal ash is disposed at AVS in the following CCR unit:

- Section 7 Ash landfill 0160

The ash landfill is located northeast of the generating units and office complex, in an area of mine spoils identified as the Coteau Properties Freedom Mine (**Figure 1**). The landfill is currently accessed via a haul road running generally east to west along the west side of the landfill.

Physical Setting

The geological and hydrogeological setting is important to understanding the groundwater environment in the vicinity of the AVS. 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 of dense clay, weakly cemented sandstone, mudstone and lignite.

Precipitation supplies surface water to perennial and ephemeral streams that flow generally east toward the Beulah Trench then draining north towards Lake Sakakawea. Groundwater is recharged primarily through regional infiltration of melt water in the spring.

The base of the AVS CCR Landfill is underlain by 115 to 200 feet (approximately) of clay rich mine spoil that overlies the Lower Sentinel Butte Formation. The Sentinel Butte is comprised primarily of dense clay with trace very fine sand and beds of lignite typically ranging from 6- to 9-feet thick at the site. The 2016 AECOM drilling investigation did not penetrate to depths great enough to expose the lower portions of the Sentinel Butte.

Water precipitated in this environment is anticipated to move primarily as surface water runoff with infiltration typically limited to the upper few feet. The uppermost aquifer is found within the 6- to 9-foot unmined lignite bed located at depths ranging roughly from 180 to 260 feet below ground surface (ft, bgs). The potentiometric surface of the uppermost groundwater present within the lignite is approximately 1893 feet above mean sea level (ft, amsl) in the western portion of the Landfill facility sloping generally east to 1880 ft., amsl on the eastern side of the landfill. The hydraulic gradient for the uppermost aquifer is locally controlled by site-specific composition of the lignite with hydraulic conductivity typically ranging from 10^{-5} centimeters per second (cm/s) to 10^{-9} cm/s.

2. CCR Groundwater Monitoring Activities Prior to 2018

The regulatory process for CCR groundwater monitoring and corrective action is established by 40 CFR §§ 257.90 through 257.98. 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 provide a brief summary of CCR groundwater monitoring activities performed prior to 2018. CCR groundwater monitoring activities performed in 2018 are discussed in Chapter 3.

Groundwater monitoring at AVS 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 the unit (**Figure 2**). The hydrostratigraphic positions of the CCR monitoring wells selected for sampling background and downgradient groundwater quality for the AVS CCR unit is summarized below:

CCR unit	Background wells	Downgradient wells
Landfill	MW-18(S), MW-19(S)	MW-15(S), MW-16(S), MW-17(S), MW-20(S)

Monitoring well MW-14(S) is being excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for groundwater level measurements.

Baseline Detection Monitoring was initiated in August 2016, which involved sampling groundwater for Part 257 Appendix III and IV constituents over eight Baseline Detection Monitoring events.

Baseline Detection Monitoring events were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (AECOM 2018a), which is included in the facility's Operating Record. The Sampling and Analysis Plan describes the procedures for equipment calibration, monitoring well water level measurement, monitoring well purging and sampling, sample custody, sample shipping, laboratory analysis and documentation requirements for each groundwater sample submitted. The results of detection monitoring at AVS were presented and discussed in the First Annual Groundwater Monitoring and Corrective Action Report, 2016-2017 (AECOM 2018b).

If a statistically significant increase (SSI) of any Appendix III constituent relative to background conditions is detected in the downgradient monitoring wells, and cannot be demonstrated to be associated with a source other than the CCR unit, then the CCR rule requires that groundwater monitoring transition from detection monitoring phase to the Assessment Monitoring phase.

The results of Baseline Detection Monitoring for the CCR unit at AVS identified no SSIs relative to background for Appendix III constituents:

As a result, the AVS groundwater monitoring system proceeded to Detection Monitoring in 2018.

3. CCR Groundwater Monitoring and Corrective Action Activities in 2018

This chapter summarizes the activities conducted at AVS in 2018 to comply with the groundwater requirements of the CCR rule:

- Groundwater Detection Monitoring activities
  - monitoring system evaluation
  - groundwater sampling
  - laboratory analysis
- Statistical analysis of the monitoring results

Further details concerning each of these activities are provided below.

Detection Monitoring Activities

Monitoring System Evaluation

As described in the CCR Groundwater Monitoring System Report (AECOM 2017), monitoring wells were installed around the CCR unit at AVS with appropriate total depth and placement of the well screen to: (1) facilitate collection of representative groundwater samples from the uppermost aquifer, and (2) accurately measure water table elevations to support evaluation of groundwater gradient and flow direction. All monitoring wells comprising the AVS CCR monitoring system were found to be in good condition during the Detection Monitoring events conducted in 2018.

Analysis of potentiometric surface maps constructed using the depth to groundwater measurements obtained during groundwater Detection Monitoring indicates the direction of groundwater flow is generally to the east, consistent with previous data collected during baseline detection monitoring in 2016 and 2017 (AECOM 2018b), and supports the wells selected to represent background groundwater quality and the quality of groundwater downgradient of the CCR units.

Groundwater Sampling and Analysis

Basin implemented a Detection Monitoring program for the CCR Landfill unit in the spring of 2018 based on the results of Baseline Detection Monitoring as discussed in Chapter 2. The initial Detection Monitoring event for the CCR unit was conducted in April 2018, and included analysis of collected groundwater samples for the constituents listed in §257 Appendix III.

Detection Monitoring sampling and analysis in 2018 was performed in general accordance with procedures established in the Sampling and Analysis Plan (AECOM 2018a). The results are presented in **Attachment A**, which also includes a representative potentiometric surface map for the uppermost aquifer, inferred groundwater flow direction and estimated velocities, and tabulated summary of field measurements and laboratory analytical data.

Statistical Procedures and Analysis

Statistical analysis of the results of Baseline Detection Monitoring in 2017 indicated that no Appendix III constituents had SSIs over background (AECOM 2018b). These results prompted Basin to continue Detection Monitoring in 2018.

Appendix III groundwater quality data were evaluated using an interwell approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at background monitoring wells. For the AVS Landfill, monitoring wells MW-18(S) and MW-19(S) are designated as the background wells because they are

located upgradient of the ash landfill, whereas the remaining monitoring wells [MW-15(S), MW-16(S), MW-17(S), and MW-20(S)] 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. No outliers were identified in the background data. Analytical data from the background monitoring wells collected between July 2016 and October 2018 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 for the same time period 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 background data and run the statistical analyses. The results of the analyses, including the UPLs, are provided in **Table 1**.

4. General Information

The following subsections summarize any problems encountered in the AVS CCR program through 2018, any resolutions to those problems, if needed and upcoming actions planned for 2019.

Program Transitions 2018

There were no groundwater monitoring program transitions for the AVS Landfill monitoring system in 2018 except for the transition from Baseline Detection to Detection Monitoring.

Problems Encountered

No problems were encountered during the 2018 monitoring period.

Actions Planned for 2019

Basin plans on continuing the Detection Monitoring program for the CCR unit at AVS in 2019. The Detection Monitoring program will include semi-annual groundwater sampling events and the required statistical evaluations.

5. Summary and Conclusions

AECOM, on behalf of Basin, conducted two rounds of CCR groundwater Detection Monitoring at the AVS CCR Landfill in 2018. The results were used to establish background groundwater quality for Appendix III constituents in the uppermost aquifer, identify appropriate UPLs, and determine whether any UPLs were exceeded at statistically significant levels downgradient of the CCR unit at AVS.

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 the Antelope Valley Station CCR Landfill. Detection monitoring will continue at the site in 2019.

6. References

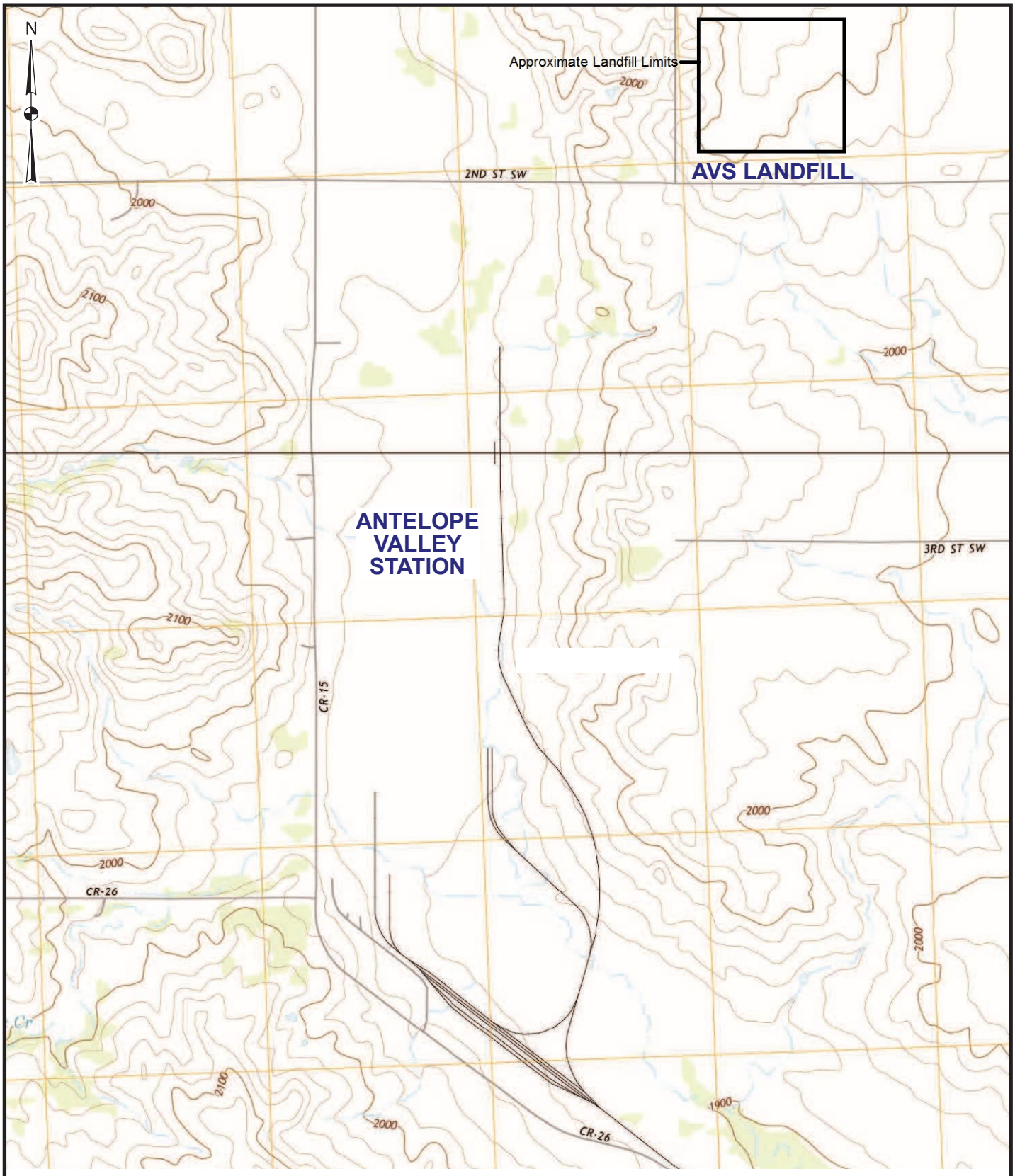
AECOM. 2017. CCR Groundwater Monitoring System Report, Antelope Valley Station, Beulah, North Dakota. Basin Electric Power Cooperative. October 2017.

AECOM. 2018a. Sampling and Analysis Plan, CCR Monitoring Program, Antelope Valley Station, Beulah, North Dakota. Basin Electric Power Cooperative. January 2018.

AECOM. 2018b. First Annual Groundwater Monitoring and Corrective Action Report, 2016-2017, Antelope Valley Station, Beulah, North Dakota. Basin Electric Power Cooperative. January 2018.

U.S. Environmental Protection Agency. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA 530-R-09-007. March 2009. 884 pp.

Figures



J:\Project\B\Basin Electric Coop\60495311 AVS Landfill CCR Wells\Data-Tech\TI

0 2,000 4,000

APPROXIMATE SCALE IN FEET

ND

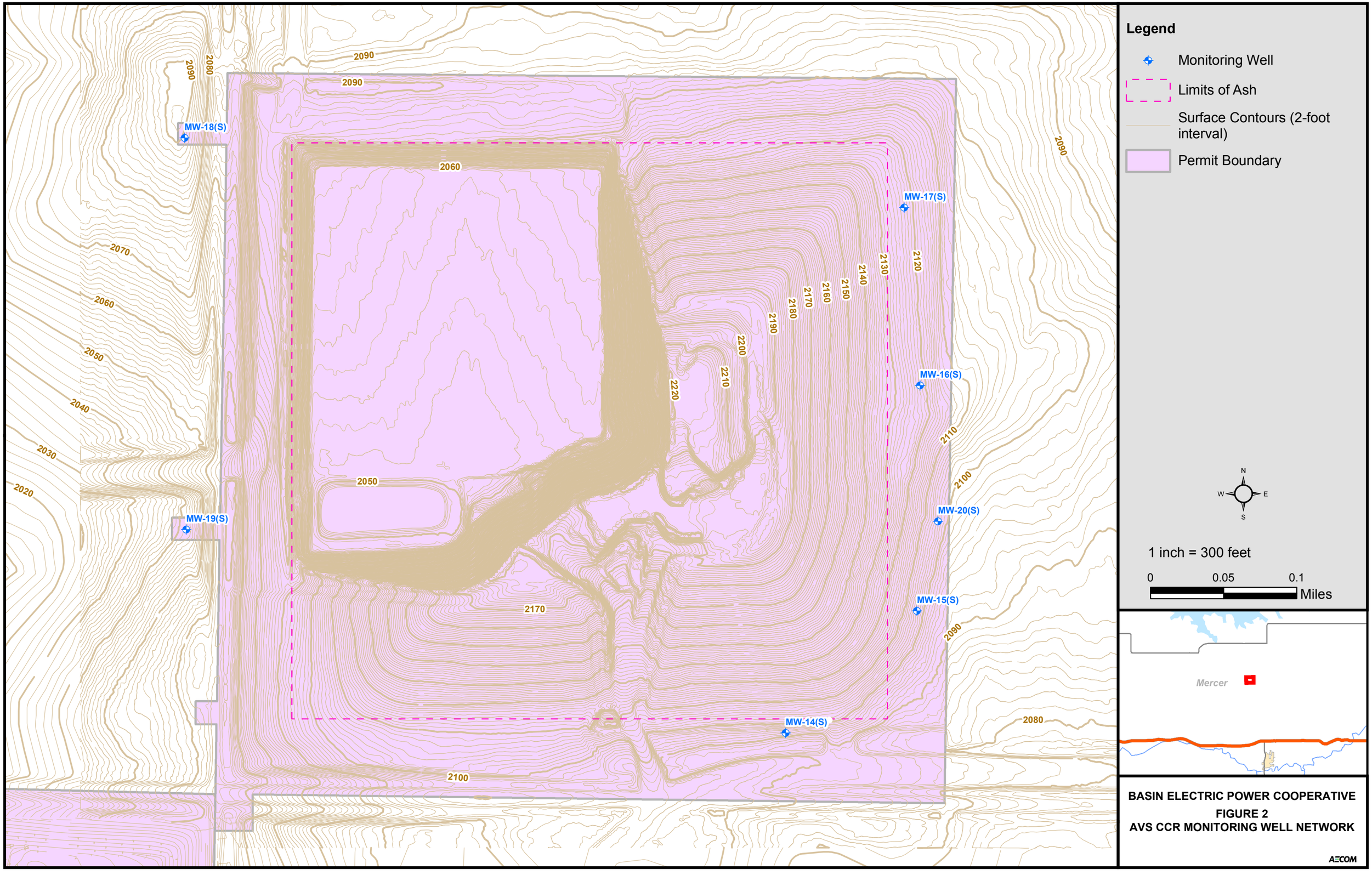
Quadrangle Location

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

BASIN ELECTRIC POWER COOPERATIVE

FIGURE 1
SITE LOCATION MAP
ANTELOPE VALLEY STATION LANDFILL

AECOM



Legend

- Monitoring Well
- Limits of Ash
- Surface Contours (2-foot interval)
- Permit Boundary

N
W E
S

1 inch = 300 feet

0 0.05 0.1 Miles

BASIN ELECTRIC POWER COOPERATIVE
FIGURE 2
AVS CCR MONITORING WELL NETWORK

AECOM

Tables

TABLE 1

STATISTICAL ANALYSIS METHODS AND BACKGROUND UPPER PREDICTION LIMITS

Parameter (Units)	Number of Samples	Percent Nondetects	Normal or Lognormal Distribution?	Statistical Method	Background Limit
Boron (mg/L)	21	71	No/No	Nonparametric 95% UPL	0.20
Calcium (mg/L)	21	0	No/Yes	Parametric 95% UPL	20
Chloride (mg/L)	21	24	No/No	Nonparametric 95% UPL	29
Fluoride (mg/L)	21	24	No/No	Nonparametric 95% UPL	4.75
pH (std units)	25	0	No/Yes	Parametric 95% UPL	10.1
Sulfate (mg/L)	21	0	No/No	Nonparametric 95% UPL	699
TDS (mg/L)	21	0	No/No	Nonparametric 95% UPL	2,009

Attachment A
Sampling and Analysis Report, 2016-2017

AECOM Imagine it. Delivered.

2018 Sampling and Analysis Report, CCR Monitoring Program

Antelope Valley Station
Beulah, North Dakota

Basin Electric Power Cooperative

January 30, 2019

Prepared for:

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List of Acronyms

AVS	Antelope Valley Station
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
QA/QC	Quality assurance/quality control

1. Introduction

On behalf of Basin Electric Power Cooperative (Basin), AECOM Technical Services, Inc. (AECOM) prepared this Coal Combustion Residuals (CCR) Groundwater Sampling and Analysis Report for the Basin Antelope Valley Station (AVS). The objective of the report is to provide a description of the field and office activities performed in 2018 in support of the AVS CCR groundwater monitoring program.

This Sampling and Analysis Report was prepared to present the results of sampling and analysis of groundwater conducted for the monitoring requirements of the United States Environmental Protection Agency (EPA) CCR rule (Chapter 40 of the Code of Federal Regulations (CFR), §§ 257.90 to 257.98). Specifically, the report presents data collected for the groundwater Detection Monitoring events conducted in 2018.

2. Groundwater Flow

As required by 40 CFR § 257.93(c), groundwater elevations were measured in each well prior to purging each time groundwater was sampled. The measurements, presented in **Table 1**, were used to create potentiometric surface maps for the uppermost aquifer for the baseline monitoring events. The resulting potentiometric surface maps were used to evaluate the direction of groundwater flow and hydraulic gradient for the subject CCR unit. **Figure 1** and **Figure 2** represent potentiometric surface maps constructed using measurements taken on April 25, 2018 and October 10, 2018 respectively. These potentiometric maps illustrate groundwater flow patterns that are generally consistent with the patterns observed during CCR monitoring events performed at AVS in 2017. Groundwater flow velocities were calculated and are summarized in **Table 2**.

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

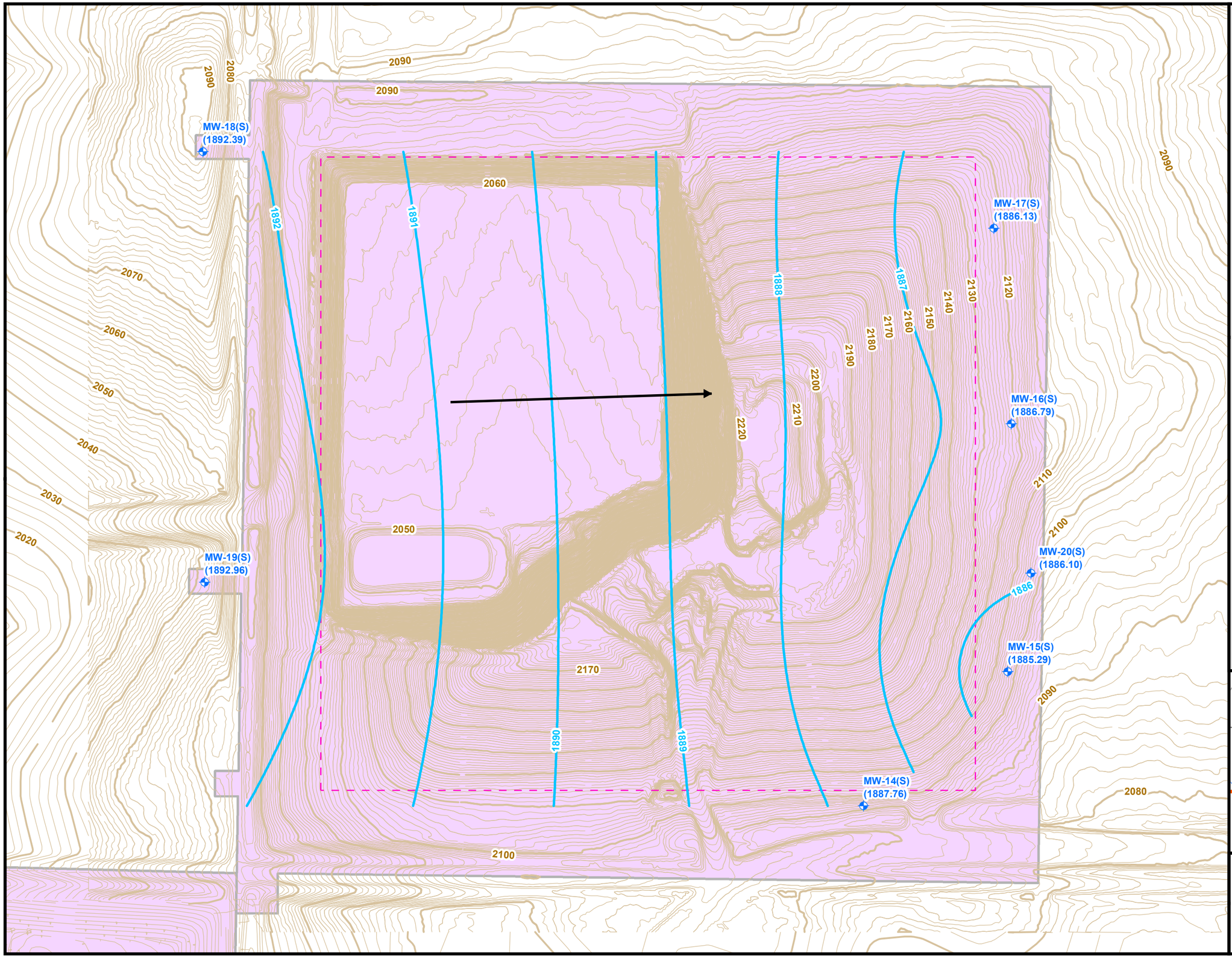
CCR unit	Background wells	Downgradient wells
Landfill	MW-18(S), MW-19(S)	MW15(S), MW-16(S), MW-17(S), MW-20(S)

Monitoring well MW-14(S) is being excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for groundwater level measurements.

3. Groundwater Quality

The analytical testing laboratory provided reports presenting the results of laboratory analysis for each monitoring event. These laboratory reports are included in the operating record, and were reviewed for completeness against the project-required methods and the chain-of-custody forms. Laboratory 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. Data validation reports were prepared for each monitoring event and are included in the operating record. The validated results were compiled into summary form as presented in **Table 3**.

Figures



Legend

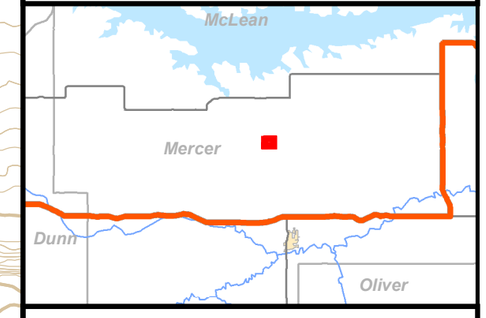
- Groundwater Flow Direction
- Monitoring Well
- Potentiometric Surface Contour (1-foot interval) April 25, 2018
- Limits of Ash
- Surface Contours (2-foot interval)
- Permit Boundary

NOTE:
1. Groundwater elevations were obtained on April 25, 2018.

N
W E
S

1 inch = 300 feet

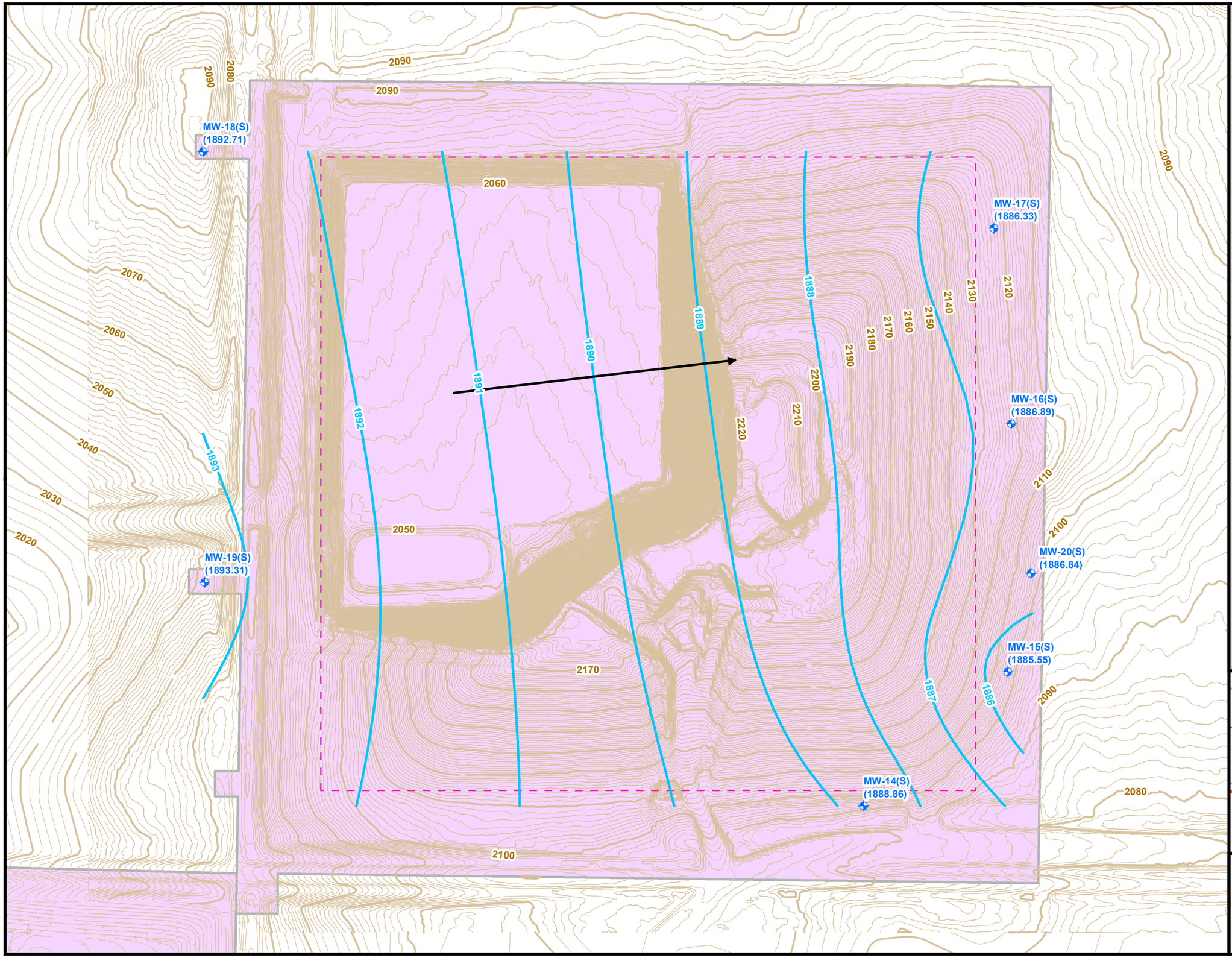
0 0.05 0.1 Miles



BASIN ELECTRIC POWER COOPERATIVE
FIGURE 1
POTENTIOMETRIC SURFACE MAP
APRIL 2018
AVS LANDFILL

JOB NO. 60570072

AECOM



Legend

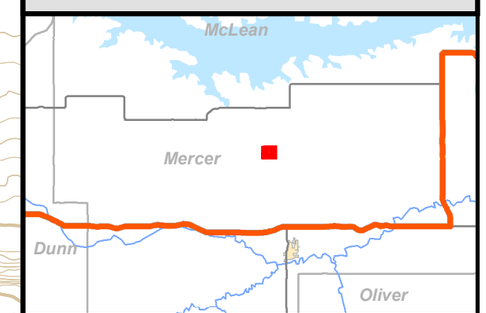
- Groundwater Flow Direction
- Monitoring Well
- Piezometric Surface Contour (1-foot interval) October 10, 2018 (4th quarter)
- Limits of Ash
- Surface Contours (2-foot interval)
- Permit Boundary

NOTE:
1. Groundwater elevations were obtained on October 10, 2018.

N
W E
S

1 inch = 300 feet

0 0.05 0.1 Miles



BASIN ELECTRIC POWER COOPERATIVE
FIGURE 2
POTENTIOMETRIC SURFACE MAP
OCTOBER 2018
AVS LANDFILL

JOB NO. 60570072 AECOM

Tables

TABLE 1

GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR MONITORING WELLS 2018
ANTELOPE VALLEY STATION - BEULAH, ND

Well ID	Reference Elevation Top of Casing* (feet, NAVD 88)	April 25, 2018 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)	October 10, 2018 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-14(S)	2093.54	205.78	1887.76	204.68	1888.86
MW-15(S)	2104.89	219.60	1885.29	219.34	1885.55
MW-16(S)	2123.70	236.91	1886.79	236.81	1886.89
MW-17(S)	2125.06	238.93	1886.13	238.73	1886.33
MW-18(S)	2091.70	199.31	1892.39	198.99	1892.71
MW-19(S)	2042.68	149.72	1892.96	149.37	1893.31
MW-20(S)	2107.57	221.47	1886.10	220.73	1886.84

TABLE 2

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)
7/13/2016	1050	3	2.86E-03	0.185	0.234	3.62E-03
2/22/2017	1140	3	2.63E-03	0.185	0.234	3.33E-03
3/21/2017	1020	2	1.96E-03	0.185	0.234	2.48E-03
4/19/2017	1050	3	2.86E-03	0.185	0.234	3.62E-03
5/23/2017	1230	3	2.44E-03	0.185	0.234	3.09E-03
6/28/2017	1020	3	2.94E-03	0.185	0.234	3.72E-03
7/24/2017	1110	3	2.70E-03	0.185	0.234	3.42E-03
8/16/2017	1410	3	2.13E-03	0.185	0.234	2.69E-03

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 2.34 E-01 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.

TABLE 3

LANDFILL ANALYTICAL RESULTS

Analytical Results Summary

			Appendix III Constituents																	
Analyte Name			Boron		Calcium		Chloride		Fluoride		pH		Sulfate		TDS	
Unit			mg/L		mg/L		mg/L		mg/L		S.U.		mg/L		mg/L	
Downgradient	MW-15S	7/13/2016	0.14		19.0	B	13		1		7.82		310		1700	
		2/24/2017	0.20	U	18.0		30	U	5	U	8.06		250		1800	
		3/21/2017	0.20	U	9.7		16		2.5	U	7.77		280		1700	
		4/19/2017	0.20	U	11.0		15	U	2.5	U	7.46		360		1800	
		5/23/2017	0.20	U	13.0		12		0.99		7.10		320		1800	
		6/29/2017	0.20	U	6.5		12	1	1.1	1	7.49		370	1	1700	
		7/24/2017	0.20	U	6.5		11	2	1.4	2	7.39		410	2	1800	
		8/16/2017	0.20	U	5.5		11	H	1.3	H	7.40		400	H	1700	
		4/25/2018	0.14		6.4		14		1.2		8.09		300		1800	B
		10/10/2018	0.141		5.77		14.6		1.18		8.16				1810	H
	MW-16S	7/14/2016	0.14		18.0	B	10		1.6		9.43		96		800	
		2/23/2017	0.20	U	20.0		30	U	5	U	7.80		79		1500	
		3/24/2017	0.20	U	10.0		18		2.5	U	7.76		48		1200	
		4/20/2017	0.20	U	5.2		16		2.5	U	8.64		80		1300	
		5/24/2017	0.20	U	7.8		13		1.1		8.51		140		1300	
		6/29/2017	0.20	U	8.2		17	1	1.2	1	7.57		40	1	1500	
		7/25/2017	0.20	U	7.6		17	2	1.3	2	7.48		73	2	1600	
		8/17/2017	0.20	U	7.3		15	H	1.3	H	7.51		130	H	1500	
		4/25/2018	0.11		5.1		16		1.8		9.10		74		1200	B
		10/10/2018	0.132		4.75		15.3		1.25		8.55		150		1450	H
	MW-17S	7/15/2016	0.15		25.0	B	11		0.92		7.62		310		1500	
		2/23/2017	0.20	U	16.0		30	U	5	U	8.28		290		1600	
		3/21/2017	0.20	U	16.0		15	U	2.5	U	7.61		270		1600	
		4/20/2017	0.20	U	12.0		15	U	2.5	U	8.35		290		1700	
		5/24/2017	0.20	U	9.0		11		0.99		7.51		250		1700	
		6/29/2017	0.20	U	8.6		12	1	1	1	7.37		260	1	1600	
		7/25/2017	0.20	U	7.8		12	2	1.2	2	7.47		270	2	1600	
		8/17/2017	0.20	U	8.3		12	H	1.3	H	7.41		260	H	1600	
		4/25/2018	0.17		8.0		12		1.1		8.25		300		1700	B
		10/10/2018	0.152		6.43		13.6		1.1		8.48		239		1390	H
	MW-20S	2/2/2017	0.20	U	31.0		18		0.78		NA		160		1300	
		2/23/2017	0.20	U	21.0		30	U	5	U	7.53		280		1900	
		3/24/2017	0.20	U	6.0		15	U	2.5	U	7.61		690		1900	
		4/20/2017	0.20	U	17.0		20		2.5	U	8.15		230		2000	
		5/24/2017	0.20	U	12.0		17		1.1		7.33		270		1800	
		6/28/2017	0.20	U	11.0		27	1	1.1	1	7.60		73	1	1800	
		7/25/2017	0.20	U	8.8		26	2	1.2	2	9.74		120	2	1800	
		8/16/2017	0.20	U	12.0		23	H	1.1		7.29		190	H	2300	
		4/25/2018	0.16		11.0		26		1.1		7.74		95		1900	B
		10/10/2018	0.161		7.26		26.0		1.07		8.02		88.2		1900	B
Background	MW-18S	7/13/2016	0.11		12.0	B	5.6		1.2		9.97		370		1600	
		2/24/2017	0.20	U	21.0		30	U	5.0	U	9.85		330		1100	
		3/21/2017	0.20	U	21.0		15	U	2.5	U	9.34		360		1400	
		4/20/2017	0.20	U	13.0		15	U	2.5	U	10.03		390		1400	
		5/23/2017	0.20	U	12.0		5.4		1.7		8.86		350		1400	
		6/28/2017	0.20	U	12.0		5.6	1	1.6	1	9.10		360	1	1300	
		7/24/2017	0.20	U	12.0		5.8	2	1.9	2	8.91		360	2	1400	
		8/17/2017	0.20	U	9.7		5.4	H	1.8	H	8.92		370	H	1300	
		4/25/2018	0.14		10.0		7.0		2.0		9.00		320		1200	B
		10/10/2018	0.136		8.60		6.80		1.85		9.35		319		1510	B
	MW-19S	7/13/2016	0.11		12.0	B	12	F1	0.5		7.93		680		1900	
		2/2/2017	0.20	U	5.4		12		0.58		7.80		670		2000	
		2/24/2017	0.20	U	5.5		12		0.56		7.73		700		2000	
		3/21/2017	0.20	U	6.9		15	U	2.5	U	7.77		690		1900	
		4/20/2017	0.20	U	5.9		15	U	2.5	U	8.80		630		2000	
		5/23/2017	0.20	U	5.6		11		0.51		7.61		630		2000	
		6/28/2017	0.20	U	5.7		12	1	0.56	1	7.59		660	1	1900	
		7/24/2017	0.20	U	5.0		12	2	0.65	2	7.33		670	2	1900	
		8/17/2017	0.20	U	4.9		12	H	0.64	H	7.40		620	H	1800	
		4/25/2018	0.16		4.6		12		0.63		8.05		660		2000	B
		10/10/2018	0.154		4.34		12.7		0.56		8.63		669		2010	H *

TDS = Total Dissolved Solids
NE = Not Established
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
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
B = Compound was found in the blank and sample.
^ = ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
H = Sample was prepped or analyzed beyond the specified holding time
NA = Measurements not available/Sample not analyzed for
1 = Samples collected on 10-11-17 and 10-12-17 to fill data gap during original sampling event #6
2 = Samples collected on 10-12-17 and 10-13-17 to fill data gap during original sampling event #7
* = LCS or LCSD is outside acceptance limits

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