



ANNUAL GROUNDWATER REPORT

ANNUAL GROUNDWATER REPORT – 2017

GREAT RIVER ENERGY – STANTON STATION



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Table of Contents

1.0	INTRODUCTION.....	1
1.1	Purpose	1
1.2	Site Background	1
2.0	GROUNDWATER MONITORING NETWORK PROGRAM STATUS	2
2.1	Completed Key Actions in 2017	2
2.2	Installation and Decommissioning of Wells.....	2
2.3	Problems and Resolutions	2
2.4	Key Activities in 2018	2
3.0	GROUNDWATER MONITORING ANALYTICAL PROGRAM STATUS	4
3.1	Collected Samples	4
3.1.1	Groundwater Elevation and Flow Rate	4
3.2	Monitoring Program Data (Analytical Results)	5
3.3	Comparative Statistical Analysis	5
4.0	PROGRAM TRANSITIONS	6
4.1	Detection Monitoring	6
4.2	Assessment Monitoring	6
4.3	Corrective Measures and Assessment	6
5.0	CLOSING	7
6.0	REFERENCES.....	8

List of Tables

Table 1	Monitoring Well Summary
Table 2	Sample Results Summary Table – MW-6B
Table 3	Sample Results Summary Table – MW-7A
Table 4	Sample Results Summary Table – MW-7B
Table 5	Sample Results Summary Table – MW-8B
Table 6	Sample Results Summary Table – MW-105
Table 7	Sample Results Summary Table – MW-3B
Table 8	Sample Results Summary Table – MW-9N
Table 9	Sample Results Summary Table – MW-101
Table 10	Sample Results Summary Table – MW-102
Table 11	Sample Results Summary Table – MW-1R
Table 12	Sample Results Summary Table – MW-103
Table 13	Sample Results Summary Table – MW-104
Table 14	Range in Groundwater Flow Rates

List of Figures

Figure 1	Monitoring Well Locations and April 2017 Groundwater Contours
Figure 2	Monitoring Well Locations and October 2017 Groundwater Contours



1.0 INTRODUCTION

Golder Associates Inc. (Golder) has prepared this report for the 2017 groundwater sampling and comparative statistical analysis for Great River Energy's (GRE) Stanton Station to meet the requirements of the Coal Combustion Residuals (CCR) rule's sections on groundwater monitoring and corrective action, 40 Code of Federal Regulations (CFR) 257.90 through 257.98.

1.1 Purpose

The CCR rule established specific requirements for reporting of actions related to groundwater monitoring and corrective actions in 40 CFR 257.90. Per part (e) of 40 CFR 257.90, no later than January 31, 2018, and annually thereafter, owners or operators of CCR units must prepare an annual groundwater monitoring and corrective action report.

1.2 Site Background

GRE's Stanton Station is a coal-fired power plant located in Mercer County, North Dakota, approximately three miles southeast of the city of Stanton along the Missouri River. Stanton Station began generating power in 1966 and ceased power production in February 2017. CCRs are managed in composite-lined surface water impoundment cells and dry waste facilities regulated and permitted by the North Dakota Department of Health (NDDH) in accordance with North Dakota Administrative Code Article 33-20, Solid Waste Management and Land Protection.

Stanton Station has two CCR facilities that are within the purview of the United States Environmental Protection Agency (EPA) CCR rule:

- Bottom Ash CCR Landfill (Bottom Ash Landfill)
- Bottom Ash CCR Surface Impoundment (Bottom Ash Impoundment)

These facilities are separated into two monitoring network units. Locations of the facilities, groundwater monitoring network units, and groundwater monitoring wells are shown in Figure 1 and Figure 2.



2.0 GROUNDWATER MONITORING NETWORK PROGRAM STATUS

The CCR groundwater monitoring system at Stanton Station consists of a total of 12 monitoring locations (five background and seven downgradient wells). The monitoring locations are shown on Figures 1 and 2 and listed in Table 1. Additional information on the groundwater monitoring system can be found in the Coal Combustion Residuals Groundwater Monitoring System Certification (Golder 2017a). Each CCR facility is part of a monitoring network consisting of at least one upgradient and three downgradient monitoring wells.

The groundwater monitoring system at Stanton Station is divided as follows:

- The background monitoring wells are located south and west of the CCR units where groundwater is not expected to have been influenced by historic CCR deposition based on groundwater flow trends. There are four upgradient monitoring wells and one side-gradient monitoring well shared between the CCR facilities.
- The Bottom Ash Landfill has four downgradient monitoring wells.
- The Bottom Ash Impoundment has three downgradient monitoring wells.

2.1 Completed Key Actions in 2017

The following key actions were completed in 2017:

- The Coal Combustion Residuals Groundwater Monitoring System Certification, Great River Energy – Stanton Station, was placed in the operating record and on the publically accessible CCR website (Golder 2017a).
- The Coal Combustion Residuals Groundwater Statistical Method Certification, Great River Energy – Stanton Station, was placed in the operating record and on the publically accessible CCR website (Golder 2017b).
- Baseline samples (a minimum of eight) were collected between June 2016 and April 2017. Baseline samples were analyzed for both the Appendix III and Appendix IV constituent lists associated with the CCR rule.
- The first detection monitoring samples were collected in October 2017 and analyzed for the Appendix III constituents list associated with the CCR rule.

2.2 Installation and Decommissioning of Wells

No wells were installed as part of the Stanton Station CCR monitoring well network in 2017. No wells were decommissioned from the Stanton Station CCR monitoring well network during the baseline period or in 2017 following the start of detection monitoring.

2.3 Problems and Resolutions

No problems were encountered during the baseline period or during the first detection monitoring event in October 2017.

2.4 Key Activities in 2018

The following key actions are anticipated to be completed in 2018:



- Comparative statistics for the first detection monitoring event (see Section 3.2 for further details).
- Detection monitoring sampling events will occur in the second and fourth quarter of 2018, and will consist of sampling, validation of data, and comparative statistics.



3.0 GROUNDWATER MONITORING ANALYTICAL PROGRAM STATUS

Analytical activities associated with the groundwater monitoring program are described below.

3.1 Collected Samples

Samples for the baseline period were collected by field staff from Minnesota Valley Testing Laboratory (MVTL) between June 2016 and April 2017. Nine or ten baseline samples were collected at each location. Precise dates for baseline samples vary between locations, and can be found on Tables 2 through 13. Additionally, the first detection monitoring event was collected in October 2017 by field staff from MVTL. Results from the first detection monitoring event are shown on Tables 2 through 13.

Samples were collected using low-flow methodology with dedicated bladder pumps. The sampling procedures and analytical test methods are in accordance with the EPA accepted procedures.

3.1.1 Groundwater Elevation and Flow Rate

Groundwater elevations were measured in each well during each sampling event prior to purging. Elevation measurements can be found in Tables 2 through 13. Groundwater elevations and interpolated groundwater contours from the April 2017 baseline sampling event are shown on Figure 1. Groundwater elevations and interpolated groundwater contours from the October 2017 detection monitoring sampling event are shown in Figure 2. Based on both the April 2017 and October 2017 groundwater elevations/contours, the shallow groundwater at the CCR facilities generally flows northeast.

The groundwater flow rate across each facility was estimated with the equation $V_s = k \times i / n_e$, where:

- V_s is the groundwater flow rate, in feet per day (ft/day);
- k is the hydraulic conductivity, estimated from slug testing results from system wells (Braun 1993), in ft/day;
- i is the hydraulic gradient, calculated based on groundwater elevations for each monitoring event, in feet per feet (ft/ft);
- n_e is the effective porosity, estimated to be 0.25 for a silt/sand and is reflective of site soils (Duffield 2007).

Table 14 shows the range of groundwater flow velocities calculated for each unit during the April 2017 and October 2017 groundwater sampling events. Groundwater flow rates are presented based on a range of measured hydraulic conductivity values.

**Table 14. Range in Groundwater Flow Rates**

Unit	Date	
	Apr-17	Oct-17
Bottom Ash Landfill	0.02 - 0.77 ft/day	0.03 - 0.97 ft/day
Bottom Ash Impoundment	0.03 - 1.20 ft/day	0.03 - 1.31 ft/day

3.2 Monitoring Program Data (Analytical Results)

Analytical results for the baseline period, including Appendix III and Appendix IV results for monitoring wells within the network, are shown on Tables 2 through 13. Tables 2 through 13 also include Appendix III detection monitoring results for the October 2017 monitoring event.

3.3 Comparative Statistical Analysis

Based on the timing of the first detection monitoring sample, comparative statistical analysis will occur within 90 days of data validation following receipt of the analytical data, in the first quarter of 2018. A full description of the steps that will be taken for the comparative statistical analysis can be found in the Coal Combustion Residuals Groundwater Statistical Method Certification, Great River Energy – Stanton Station (Golder 2017b).



4.0 PROGRAM TRANSITIONS

Beginning in the fourth quarter of 2017, the groundwater monitoring program at Stanton Station transitioned from the baseline period to detection monitoring. During the baseline period, at least eight independent samples from each well within the program were collected and analyzed for the constituents listed in Appendix III and Appendix IV of the rule prior to October 17, 2017, as specified in 40 CFR 257.94(b). The first detection monitoring samples were collected in the fourth quarter of 2017.

4.1 Detection Monitoring

Samples for the detection monitoring program are collected on a semi-annual basis, beginning with the sample collected in the fourth quarter of 2017, as discussed in Section 3.1.

4.2 Assessment Monitoring

Results to date from the current CCR groundwater monitoring program at Stanton Station do not trigger the need to implement assessment monitoring as described in 40 CFR 257.95. As such, no alternative source demonstrations have been made and there are no actions that are required as part of the assessment monitoring program.

4.3 Corrective Measures and Assessment

Results to date from the CCR groundwater monitoring program at Stanton Station do not trigger the need to assess or implement corrective measures. Since the CCR groundwater monitoring program does not require corrective measures, an assessment of corrective measures, as described in 40 CFR 257.96, has not been initiated and no actions are required.



5.0 CLOSING

This report presents the results from the baseline period and the first detection monitoring event of the CCR program. No comparative statistical analysis was performed in 2017 due to the date of sampling, receipt of analytical data, and finalization of data validation. Comparative statistics will occur within 90 days of finalization of data validation, during the first quarter of 2018. The groundwater monitoring and analytical procedures implemented meet the requirements of the CCR rule and are consistent with the approach described in the Groundwater Monitoring System Certification (Golder 2017a) and the Groundwater Monitoring Statistical Methods Certification (Golder 2017b). Results presented within this report support remaining in detection monitoring, and do not trigger assessment monitoring nor an assessment of corrective measures.

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6.0 REFERENCES

Braun. 1993. Hydrogeologic Assessment Report, Stanton Station Ash Ponds. Prepared for Great River Energy Stanton Generating Station. Prepared by Braun Intertec Environmental Inc., 1993.

Duffield, Glenn M., 2007. AQTESOLV for Windows Version 4.5 User's Guide.

Golder, 2017a. Coal Combustion Residuals Groundwater Monitoring System Certification, Great River Energy – Stanton Station. October 12, 2017.

Golder, 2017b. Coal Combustion Residuals Groundwater Monitoring Statistical Method Certification, Great River Energy – Stanton Station. October 12, 2017.

TABLES

Table 1: Monitoring Well Summary

Location	Well ID	Date Constructed	TOC Elevation	Ground Surface Elevation	Screen Interval	Top of Screen Elevation	Bottom of Screen Elevation	Sand Pack Interval	Geologic Unit(s) Completed In
			ft amsl	ft amsl	ft bgs	ft amsl	ft amsl	ft bgs	
Upgradient/Side-gradient	MW-6B	9/8/1992	1711.2	1709.3	28.4-38.4	1681	1671	19.0-38.5	Outwash
	MW-7A	8/27/1992	1713.4	1711.0	7.0-17.0	1704	1694	5.0-18.0	Silty Sand/Clay
	MW-7B	9/9/1992	1712.7	1710.9	28.1-38.1	1682	1672	23.0-38.5	Silty Sand/Outwash
	MW-8B	9/3/1992	1749.7	1747.2	54.0-64.0	1694	1684	49.0-64.5	Outwash
	MW-105	11/18/2015	1716.6	1713.5	9.0-19.0	1704	1694	7.0-19.0	Clay/Outwash
Bottom Ash Landfill Downgradient	MW-3B	6/11/1982	1713.0	1709.4	23.7-28.7	1687	1682	23.2-29.5	Outwash
	MW-9N	7/19/2010	1708.1	1705.5	16.0-26.0	1689	1679	14.0 - 26.0	Outwash
	MW-101	11/17/2015	1710.8	1707.5	8.0-18.0	1700	1690	6.0-18.0	Silty Sand/Clay
	MW-102	11/17/2015	1711.7	1708.5	14.0-24.0	1694	1684	12.0-24.0	Silty Sand/Clay
Bottom Ash Impoundment Downgradient	MW-1R	11/8/1995	1709.2	1706.8	27.0-36.0	1682	1671	25.0-38.0	Outwash/Clay
	MW-103	11/17/2015	1709.1	1705.6	14.0-24.0	1692	1682	12.0-24.0	Outwash
	MW-104	11/17/2015	1711.7	1708.5	14.0-24.0	1694	1684	12.0-24.0	Outwash

Notes:

TOC: top of casing
ft amsl: feet above mean sea level
ft bgs: feet below ground surface
TOC and ground surface elevations surveyed by Interstate Engineering, Inc. in December 2015.
Well construction measurements are from the original bore log, well data sheet or well construction form.



Table 2: Sample Results Summary Table - MW-6

		MW-6B										
		Baseline Period										Detection Monitoring
	Units	13-Jun-16	12-Jul-16	8-Aug-16	7-Sep-16	11-Oct-16	21-Nov-16	18-Jan-17	22-Feb-17	28-Mar-17	27-Apr-17	25-Oct-17
Water Elevation	ft AMSL	1693.2	1693.0	1695.0	1692.9	1693.0	1693.2	1693.3	1693.5	1693.8	1693.8	1693.2
Appendix III Parameters												
Boron	mg/L	0.34	0.32	0.33	0.34	0.34	0.32	0.23	0.36	0.35	0.34	0.29
Calcium	mg/L	32.8	33.0	31.0	30.0	29.6	28.3	26.8	27	24.3	27.7	22.7
Chloride	mg/L	12.3	11.9	11.5	13.6	13.6	11.9	11.3	12.4	12.0	12.5	10.9
Fluoride	mg/L	0.56	0.52	0.53	0.55	0.56	0.58	0.57	0.62	0.60	0.53	0.56
pH, Field	s.u.	7.69	7.55	7.61	7.54	7.67	7.59	7.56	7.49	7.76	7.75	7.48
Sulfate	mg/L	374	372	391	366	325	364	357	304	334	347	316
Total Dissolved Solids	mg/L	1050	1060	1060	1040	1050	1080	1000	1110	1040	1040	1020
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	0.0036	0.0037	0.0041	0.0034	0.0038	0.0043	0.0037	0.0035	0.0041	0.0037	---
Barium	mg/L	0.0299	0.0275	0.0282	0.0274	0.0264	0.0268	0.0258	0.025	0.0237	0.0245	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.56	0.52	0.53	0.55	0.56	0.58	0.57	0.62	0.60	0.53	---
Lead	mg/L	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	0.0155	0.013	0.0131	0.013	0.0127	0.0115	0.0107	0.0121	0.0124	---
Radium 226	pCi/L	< 0.2	0.2 ± 0.1	< 0.2	< 0.2	< 0.2	0.2 ± 0.1	< 0.2	< 0.2	< 0.4	< 0.2	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	6.0 ± 2.8	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	6.0 ± 2.8	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.002	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 3: Sample Results Summary Table - MW-7A

		MW-7A										
		Baseline Period										Detection Monitoring
	Units	13-Jun-16	11-Jul-16	8-Aug-16	6-Sep-16	11-Oct-16	21-Nov-16	18-Jan-17	22-Feb-17	28-Mar-17	27-Apr-17	25-Oct-17
Water Elevation	ft AMSL	1701.4	1701.9	1701.8	1701.4	1701.3	1701.5	1701.4	1701.6	1702.4	1703.3	1701.9
Appendix III Parameters												
Boron	mg/L	0.70	0.79	0.86	0.86	0.92	0.68	< 0.50 @	0.88	0.85	0.67	0.58
Calcium	mg/L	1880	432	444	425	444	406	416	407	454	434	420
Chloride	mg/L	34.9	35.7	34.2	48.5	45.8	42.8	40.9	41.7	152	45.2	45.7
Fluoride	mg/L	0.54	0.51	0.51	0.55	0.55	0.57	0.56	0.58	0.54	0.51	0.57
pH, Field	s.u.	7.26	7.16	7.13	7.12	7.24	7.21	7.00	7.22	7.25	7.23	7.06
Sulfate	mg/L	11100	11500	11900	11100	10900	11200	10500	8650	10000	10100	9620
Total Dissolved Solids	mg/L	15800	16000	15800	14200	16000	15200	15400	15500	16300	16300	15800
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002 @	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004 @	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.0092	0.0079	0.0088	0.0091	0.0095	0.0109	0.0092	0.0079	0.0086	0.0088	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.001 @	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.001 @	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004 @	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004 @	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.54	0.51	0.51	0.55	0.55	0.57	0.56	0.58	0.54	0.51	---
Lead	mg/L	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	< 0.002 ^	< 0.001 @	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	0.3	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	< 0.50 @	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	0.0112	0.0129	0.013	0.0133	0.0113	0.0098	0.0091	0.0111	0.0095	---
Radium 226	pCi/L	< 0.2	< 0.2	< 0.2	< 0.2	0.2 ± 0.1	0.2 ± 0.1	< 0.2	< 0.2	< 0.4	< 0.2	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	2.6 ± 2.7	< 2.0	3.9 ± 2.9	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	2.6 ± 2.7	< 2.0	3.9 ± 2.9	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	0.0031	< 0.01 ^	< 0.01 @	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	0.0011	< 0.0005	< 0.0005	< 0.0005	< 0.001 @	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).
@ = Analyte required a dilution due to sample matrix, resulting in an elevated RL.

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 4: Sample Results Summary Table - MW-7B

		MW-7B										
		Baseline Period										Detection Monitoring
	Units	13-Jun-16	11-Jul-16	8-Aug-16	6-Sep-16	11-Oct-16	21-Nov-16	18-Jan-17	22-Feb-17	28-Mar-17	27-Apr-17	25-Oct-17
Water Elevation	ft AMSL	1701.1	1701.5	1701.6	1701.9	1702.1	1702.1	1701.9	1702.9	1702.5	1702.1	1702.3
Appendix III Parameters												
Boron	mg/L	0.44	0.45	0.45	0.45	0.44	0.41	0.34	0.46	0.44	0.42	0.37
Calcium	mg/L	18.9	19.6	18.9	18.8	18.6	19.1	19.4	19.8	18.5	18.5	16.7
Chloride	mg/L	8.9	6.6	8.6	10.2	10.0	9.2	8.6	9.3	9.4	9.6	8.6
Fluoride	mg/L	0.61	0.52	0.57	0.59	0.59	0.62	0.58	0.63	0.61	0.55	0.57
pH, Field	s.u.	7.72	7.61	7.66	7.50	7.74	7.61	7.43	7.54	7.68	7.67	7.43
Sulfate	mg/L	312	346	364	309	320	289	303	288	267	280	262
Total Dissolved Solids	mg/L	1020	1510	1090	1010	1070	961	1020	1140	1090	1200	1020
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.002	< 0.005 ^	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.0205	0.0197	0.02	0.0216	0.0186	0.02	0.0179	0.02	0.0199	0.0176	---
Beryllium	mg/L	< 0.0005	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.61	0.52	0.57	0.59	0.59	0.62	0.58	0.63	0.61	0.55	---
Lead	mg/L	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	0.0082	0.0064	0.0053	0.0061	0.0053	0.005	0.0048	0.0054	0.005	---
Radium 226	pCi/L	< 0.2	< 0.2	0.2 ± 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	0.3 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.002	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 5: Sample Results Summary Table - MW-8B

		MW-8B										
		Baseline Period										Detection Monitoring
	Units	13-Jun-16	11-Jul-16	8-Aug-16	7-Sep-16	11-Oct-16	21-Nov-16	18-Jan-17	22-Feb-17	29-Mar-17	27-Apr-17	25-Oct-17
Water Elevation	ft AMSL	1705.1	1706.0	1708.0	1710.9	1710.5	1709.7	1708.5	1707.7	1707.2	1706.9	1710.6
Appendix III Parameters												
Boron	mg/L	0.28	0.36	0.35	0.40	0.33	0.27	0.17	0.26	0.30	0.25	0.30
Calcium	mg/L	90.8	84.5	83.3	89.4	87.9	81.5	89.8	82.5	86.5	75.1	83.9
Chloride	mg/L	9.0	10.7	10.9	15.3	12.7	9.9	8.5	15.6	9.4	8.5	10.5
Fluoride	mg/L	0.18	0.26	0.27	0.34	0.27	0.26	0.21	0.19	0.22	0.19	0.29
pH, Field	s.u.	7.41	7.40	7.36	7.27	7.41	7.33	7.38	7.36	7.39	7.43	7.21
Sulfate	mg/L	255	431	502	642	448	342	252	181	260	233	439
Total Dissolved Solids	mg/L	791	1070	1180	1440	1160	850	712	706	938	784	1200
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.002	< 0.005 ^	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.0379	0.0596	0.0388	0.0392	0.0305	0.0296	0.0321	0.0308	0.0281	0.0262	---
Beryllium	mg/L	< 0.0005	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	0.0044	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.18	0.26	0.27	0.34	0.27	0.26	0.21	0.19	0.22	0.19	---
Lead	mg/L	< 0.0005	0.002	< 0.002 ^	< 0.0005	< 0.0005	< 0.002 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Radium 226	pCi/L	0.3 ± 0.1	0.7 ± 0.2	< 0.2	0.3 ± 0.1	0.4 ± 0.1	< 0.2	< 0.2	< 0.2	< 0.4	< 0.2	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	0.0028	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.005 ^	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 6: Sample Results Summary Table - MW-105

		MW-105									
		Baseline Period									Detection Monitoring
	Units	18-Jul-16	8-Aug-16	6-Sep-16	11-Oct-16	21-Nov-16	18-Jan-17	22-Feb-17	29-Mar-17	27-Apr-17	25-Oct-17
Water Elevation	ft AMSL	1701.9	1702.1	1702.5	1702.8	1702.8	1702.6	1703.7	1703.2	1702.7	1703.1
Appendix III Parameters											
Boron	mg/L	0.38	0.41	0.38	0.38	0.36	0.27	0.38	0.37	0.35	0.32
Calcium	mg/L	63.4	59.7	45.8	45.3	45.5	47.2	54.9	62.2	62	46.8
Chloride	mg/L	21.5	21.5	19.1	16.7	15.6	14.7	37.1	19.1	18.7	12.8
Fluoride	mg/L	0.91	0.91	1.02	1.00	1.07	1.00	1.04	0.90	0.80	1.00
pH, Field	s.u.	7.63	7.73	7.68	7.83	7.74	7.77	7.63	7.76	7.74	7.73
Sulfate	mg/L	1200	1360	775	711	725	703	714	1040	1020	642
Total Dissolved Solids	mg/L	2370	2300	1650	1640	1650	1550	1800	2280	2470	1650
Appendix IV Parameters											
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.005 ^	< 0.002	0.0022	0.0022	< 0.002	0.0024	0.0021	< 0.002	< 0.002	---
Barium	mg/L	0.0966	0.0863	0.053	0.0445	0.0476	0.046	0.0486	0.0804	0.0734	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	0.0075	0.0063	< 0.002	< 0.002	< 0.002	< 0.002	0.0024	0.007	0.007	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.91	0.91	1.02	1	1.07	1	1.04	0.9	0.8	---
Lead	mg/L	0.0005	< 0.002 ^	< 0.0005	0.0005	< 0.002 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0208	0.0232	0.0273	0.0301	0.0286	0.027	0.0239	0.0198	0.0179	---
Radium 226	pCi/L	0.2 ± 0.1	0.2 ± 0.1	0.3 ± 0.1	0.2 ± 0.1	< 0.2	< 0.2	0.4 ± 0.1	< 0.4	0.2 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	0.0651	0.0529	0.0499	0.0519	0.051	0.0526	0.0504	0.051	0.052	---
Thallium	mg/L	< 0.001 ^	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed

ft AMSL, feet above mean sea level

mg/L, milligrams per liter

s.u., standard units for pH

pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.

Metal concentrations represent the total fraction (i.e. samples have not been filtered).

Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 7: Sample Results Summary Table - MW-3B

		MW-3B										
		Baseline Period										Detection Monitoring
	Units	14-Jun-16	11-Jul-16	9-Aug-16	6-Sep-16	10-Oct-16	21-Nov-16	19-Jan-17	22-Feb-17	29-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1699.6	1699.7	1699.5	1699.3	1699.5	1699.6	1699.7	1701.0	1700.9	1700.6	1699.7
Appendix III Parameters												
Boron	mg/L	0.53	0.49	0.49	0.50	0.47	0.43	0.38	0.50	0.50	0.47	0.41
Calcium	mg/L	56.3	58.2	55.6	54.8	53.8	54.2	55.6	53.7	55.6	50.7	49
Chloride	mg/L	18.1	17.9	17.4	20.5	17.9	17.4	15.8	15.7	17.2	17.5	15.2
Fluoride	mg/L	0.56	0.52	0.52	0.55	0.54	0.56	0.62	0.59	0.57	0.58	0.52
pH, Field	s.u.	7.67	7.53	7.69	7.50	7.62	7.67	7.45	7.51	7.67	7.65	7.58
Sulfate	mg/L	633	680	695	626	668	639	629	547	534	543	517
Total Dissolved Solids	mg/L	1460	1540	1530	1510	1590	1520	1460	1520	1480	1470	1730
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	0.0052	0.0046	0.0042	0.0043	0.0038	0.0044	0.0045	0.0048	0.0042	0.0038	---
Barium	mg/L	0.057	0.046	0.0446	0.0457	0.0508	0.0456	0.0451	0.0479	0.0423	0.038	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.56	0.52	0.52	0.55	0.54	0.56	0.62	0.59	0.57	0.58	---
Lead	mg/L	0.0008	0.001	< 0.002 ^	< 0.0005	< 0.0005	< 0.001 ^	< 0.0005	0.002	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	0.0163	0.0115	0.01	0.0095	0.0084	0.0079	0.0074	0.0086	0.0091	---
Radium 226	pCi/L	0.3 ± 0.1	0.4 ± 0.1	< 0.2	0.2 ± 0.1	0.3 ± 0.2	0.9 ± 0.2	< 0.2	< 0.2	< 0.4	0.3 ± 0.1	---
Radium 228	pCi/L	2.1 ± 2.8	< 1.0	< 1.0	1.7 ± 3.1	< 1.0	< 2.0	< 2.0	2.1 ± 2.8	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	2.4 ± 2.9	< 1.0	< 1.0	1.9 ± 3.2	< 1.0	< 2.0	< 2.0	2.1 ± 2.8	< 2.0	< 2.0	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.01 ^	< 0.005 ^	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	0.0011	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 8: Sample Results Summary Table - MW-9N

		MW-9N										
		Baseline Period										Detection Monitoring
	Units	13-Jun-16	12-Jul-16	8-Aug-16	7-Sep-16	10-Oct-16	21-Nov-16	19-Jan-17	22-Feb-17	29-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1688.0	1688.0	1688.0	1687.9	1687.9	1687.8	1687.9	1688.2	1688.6	1689.0	1688.6
Appendix III Parameters												
Boron	mg/L	2.86	2.73	2.68	2.71	2.74	2.96	2.86	3.19	2.58	2.38	2.85
Calcium	mg/L	73.6	73.7	74.9	80.0	78.0	78.1	81.0	77.0	82.0	76.0	84.5
Chloride	mg/L	15.0	14.4	14.0	16.9	15.0	15.3	14.4	15.8	15.7	16.3	17.8
Fluoride	mg/L	0.53	0.51	0.52	0.55	0.55	0.58	0.60	0.59	0.56	0.56	0.56
pH, Field	s.u.	7.06	6.96	7.07	6.92	7.04	6.98	6.85	6.90	7.04	7.02	7.00
Sulfate	mg/L	1230	1290	1360	1220	1360	1320	1350	1490	1110	1260	1120
Total Dissolved Solids	mg/L	2570	2760	2760	2730	2860	2830	2860	3060	2900	2860	2900
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	0.0022	< 0.005 ^	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.1018	0.0975	0.0991	0.1225	0.0924	0.1018	0.0974	0.0992	0.0928	0.0746	---
Beryllium	mg/L	< 0.0005	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	0.0049	0.0038	0.0033	0.0039	0.0033	0.0041	0.0043	0.0047	0.0033	0.0031	---
Fluoride	mg/L	0.53	0.51	0.52	0.55	0.55	0.58	0.60	0.59	0.56	0.56	---
Lead	mg/L	0.0008	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	0.001	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0462	0.0438	0.0454	0.0445	0.047	0.0469	0.0447	0.0455	0.0501	0.0498	---
Radium 226	pCi/L	0.4 ± 0.1	0.6 ± 0.1	< 0.2	0.3 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	< 0.4	0.3 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	0.0474	0.0439	0.0503	0.0467	0.0492	0.0471	0.049	0.0446	0.0465	0.0444	---
Thallium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 9: Sample Results Summary Table - MW-101

		MW-101									
		Baseline Period									Detection Monitoring
	Units	18-Jul-16	9-Aug-16	7-Sep-16	10-Oct-16	21-Nov-16	19-Jan-17	22-Feb-17	29-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1695.8	1695.7	1695.3	1695.3	1695.0	1695.1	1697.3	1696.8	1696.3	1695.0
Appendix III Parameters											
Boron	mg/L	1.47	1.64	1.76	1.69	1.65	1.62	1.56	1.32	1.44	1.66
Calcium	mg/L	14.1	12.0	11.8	12.2	12.0	12.2	14.8	17.6	12.3	11.0
Chloride	mg/L	7.6	8.7	11.8	11.1	11.2	10.1	11.4	11.8	12.1	11.8
Fluoride	mg/L	1.12	1.15	1.14	1.12	1.17	1.21	1.31	1.04	1.10	1.00
pH, Field	s.u.	10.1	10.5	10.4	10.3	10.4	10.4	10.2	10.1	10.4	10.2
Sulfate	mg/L	481	522	430	548	412	395	323	315	348	337
Total Dissolved Solids	mg/L	2250	2240	2220	2230	2230	2240	2200	1980	2170	2090
Appendix IV Parameters											
Antimony	mg/L	0.0032	0.0036	0.0035	0.0037	0.0041	0.004	0.0033	0.0028	0.003	---
Arsenic	mg/L	0.1416	0.1996	0.19	0.1827	0.2058	0.1944	0.1768	0.1435	0.148	---
Barium	mg/L	0.0938	0.1046	0.0992	0.096	0.1087	0.1038	0.1108	0.1	0.0982	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	0.0005	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0005	---
Chromium	mg/L	< 0.002	0.0022	< 0.002	< 0.002	0.0021	< 0.002	0.0025	< 0.002	< 0.002	---
Cobalt	mg/L	0.0022	0.0025	0.0023	0.0023	0.0025	0.0023	0.0026	0.0021	0.0021	---
Fluoride	mg/L	1.12	1.15	1.14	1.12	1.17	1.21	1.31	1.04	1.1	---
Lead	mg/L	0.0174	0.0238	0.0213	0.0235	0.025	0.0241	0.0241	0.0174	0.0189	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0536	0.0436	0.0449	0.0457	0.0458	0.0378	0.0441	0.0464	0.0467	---
Radium 226	pCi/L	0.3 ± 0.1	0.3 ± 0.1	< 0.2	0.8 ± 0.2	< 0.2	< 0.2	0.2 ± 0.1	< 0.4	0.2 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	3.9 ± 3.1	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	3.9 ± 3.1	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	0.0054	0.0058	0.0055	< 0.01 ^	< 0.01 ^	0.0076	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 10: Sample Results Summary Table - MW-102

		MW-102									
		Baseline Period									Detection Monitoring
	Units	18-Jul-16	9-Aug-16	7-Sep-16	10-Oct-16	21-Nov-16	19-Jan-17	22-Feb-17	29-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1692.4	1692.1	1692.2	1692.4	1692.2	1692.4	1693.0	1692.9	1693.1	1692.9
Appendix III Parameters											
Boron	mg/L	2.11	1.90	2.14	2.01	1.91	1.94	2.23	2.40	2.18	2.17
Calcium	mg/L	73.1	80.8	64.9	65.8	65.8	65.5	65.8	55.2	49.7	58.4
Chloride	mg/L	17.5	15.9	19.0	15.0	16.2	14.5	16.0	15.3	15.9	14.9
Fluoride	mg/L	0.66	0.64	0.70	0.71	0.74	0.77	0.75	0.77	0.81	0.82
pH, Field	s.u.	7.36	7.4	7.33	7.44	7.4	7.31	7.27	7.47	7.48	7.37
Sulfate	mg/L	1080	1150	996	1090	1160	1050	868	868	812	860
Total Dissolved Solids	mg/L	2410	2160	2100	2170	2180	2160	2320	2180	2110	2050
Appendix IV Parameters											
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.005 ^	0.009	0.0033	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.1088	0.31	0.116	0.0535	0.0556	0.0457	0.0451	0.0375	0.0357	---
Beryllium	mg/L	< 0.0005	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	0.007	0.0275	0.0069	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	0.0039	0.0121	0.0041	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.66	0.64	0.70	0.71	0.74	0.77	0.75	0.77	0.81	---
Lead	mg/L	0.0022	0.0087	0.0021	0.0005	< 0.001 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0566	0.0487	0.0636	0.063	0.0619	0.0552	0.0526	0.0771	0.087	---
Radium 226	pCi/L	0.3 ± 0.1	0.5 ± 0.1	0.4 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	< 0.2	0.2 ± 0.1	< 0.4	0.6 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	3.2 ± 2.8	< 2.0	< 2.0	2.9 ± 2.7	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	3.2 ± 2.8	< 2.0	< 2.0	3.5 ± 2.8	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.01 ^	< 0.005 ^	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed

ft AMSL, feet above mean sea level

mg/L, milligrams per liter

s.u., standard units for pH

pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.

Metal concentrations represent the total fraction (i.e. samples have not been filtered).

Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 11: Sample Results Summary Table - MW-1R

		MW-1R										
		Baseline Period										Detection Monitoring
	Units	14-Jun-16	12-Jul-16	10-Aug-16	7-Sep-16	10-Oct-16	22-Nov-16	18-Jan-17	22-Feb-17	30-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1688.5	1688.5	1688.4	1688.3	1688.3	1688.3	1688.4	1688.9	1689.3	1689.5	1688.8
Appendix III Parameters												
Boron	mg/L	1.25	1.28	1.26	1.30	1.22	1.30	1.24	1.35	1.34	1.22	1.25
Calcium	mg/L	112	114	115	112	116	119	123	124	123	116	130
Chloride	mg/L	17.0	16.8	17.0	19.7	17.6	17.8	17.4	18.7	20.5	19.4	20.2
Fluoride	mg/L	0.72	0.67	0.67	0.70	0.70	0.73	0.77	0.75	0.72	0.67	0.64
pH, Field	s.u.	7.74	7.55	7.66	7.55	7.57	7.71	7.56	7.5	7.64	7.63	7.61
Sulfate	mg/L	387	382	397	375	394	409	356	387	354	397	287
Total Dissolved Solids	mg/L	1050	1070	1090	1060	1090	1100	989	1060	1050	1090	1070
Appendix IV Parameters												
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.0529	0.0443	0.0442	0.047	0.0429	0.052	0.0479	0.0487	0.0457	0.0446	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.72	0.67	0.67	0.7	0.7	0.73	0.77	0.75	0.72	0.67	---
Lead	mg/L	< 0.0005	0.0007	< 0.002 ^	< 0.005 ^	< 0.0005	< 0.001 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	< 0.025 ^	0.0136	0.012	0.0114	0.0112	0.0126	0.0116	0.0107	0.0107	0.0105	---
Radium 226	pCi/L	0.2 ± 0.1	< 0.2	0.3 ± 0.1	0.3 ± 0.1	0.4 ± 0.2	0.3 ± 0.1	< 0.2	0.3 ± 0.1	< 0.4	< 0.2	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	4.9 ± 2.8	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	4.9 ± 2.8	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.01 ^	< 0.002	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 12: Sample Results Summary Table - MW-103

		MW-103									
		Baseline Period									Detection Monitoring
	Units	18-Jul-16	9-Aug-16	7-Sep-16	10-Oct-16	22-Nov-16	18-Jan-17	23-Feb-17	30-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1688.6	1688.5	1688.4	1688.5	1688.4	1688.5	1688.9	1689.4	1690.5	1688.9
Appendix III Parameters											
Boron	mg/L	1.13	1.13	1.09	1.19	1.13	1.15	1.22	1.17	1.10	1.24
Calcium	mg/L	17.3	16.8	16.5	19.6	19.7	22.4	23.4	25.0	23.1	23.4
Chloride	mg/L	12.3	12.1	14.8	13.5	13.8	12.8	14.0	15.4	14.3	14.4
Fluoride	mg/L	0.24	0.22	0.24	0.24	0.27	0.26	0.26	0.28	0.24	0.36
pH, Field	s.u.	9.20	9.27	9.25	9.17	9.20	9.21	9.07	9.14	9.11	9.16
Sulfate	mg/L	700	759	614	695	701	643	552	570	603	460
Total Dissolved Solids	mg/L	1650	1630	1660	1750	1720	1650	1450	1680	1650	1800
Appendix IV Parameters											
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	0.0177	0.0194	0.0184	0.0163	0.0205	0.0176	0.0149	0.0164	0.0148	---
Barium	mg/L	0.0809	0.0809	0.0839	0.0863	0.105	0.1033	0.1066	0.1073	0.0901	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.24	0.22	0.24	0.24	0.27	0.26	0.26	0.28	0.24	---
Lead	mg/L	0.0026	0.0021	< 0.005 ^	0.0027	0.0034	0.0025	< 0.002 ^	0.0023	0.0015	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0265	0.0245	0.0262	0.0318	0.0352	0.0314	0.0321	0.0329	0.0285	---
Radium 226	pCi/L	0.2 ± 0.1	< 0.2	0.3 ± 0.1	0.4 ± 0.2	0.2 ± 0.1	< 0.2	0.3 ± 0.1	< 0.4	0.2 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	0.0049	0.0043	0.005	< 0.01 ^	< 0.01 ^	0.0071	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed
ft AMSL, feet above mean sea level
mg/L, milligrams per liter
s.u., standard units for pH
pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.
Metal concentrations represent the total fraction (i.e. samples have not been filtered).
Precision is not recorded for samples with radiological concentrations below the reporting limit.

Table 13: Sample Results Summary Table - MW-104

		MW-104									
		Baseline Period									Detection Monitoring
	Units	18-Jul-16	25-Aug-16	7-Sep-16	10-Oct-16	22-Nov-16	18-Jan-17	23-Feb-17	30-Mar-17	28-Apr-17	26-Oct-17
Water Elevation	ft AMSL	1689.0	1688.5	1688.5	1688.5	1688.5	1688.6	1689.0	1689.4	1689.6	1688.9
Appendix III Parameters											
Boron	mg/L	0.68	0.72	0.68	0.66	0.64	0.60	0.71	0.70	0.64	0.64
Calcium	mg/L	90.0	98.6	91.6	89.2	92.4	95.4	94.0	90.2	86.3	95.9
Chloride	mg/L	12.7	16.7	14.9	12.7	13.2	12.4	13.3	13.2	13.1	12.4
Fluoride	mg/L	0.72	0.73	0.75	0.76	0.79	0.75	0.81	0.78	0.75	0.82
pH, Field	s.u.	7.21	7.22	7.12	7.26	7.25	7.08	6.98	7.16	7.13	7.05
Sulfate	mg/L	355	429	380	399	483	378	365	338	372	392
Total Dissolved Solids	mg/L	1080	1100	1050	1100	1120	1160	1130	1060	1090	1120
Appendix IV Parameters											
Antimony	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Arsenic	mg/L	< 0.005 ^	0.0027	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Barium	mg/L	0.0592	0.1068	0.0755	0.0576	0.0636	0.0631	0.0628	0.062	0.0552	---
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Cadmium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---
Chromium	mg/L	< 0.002	0.0026	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	---
Cobalt	mg/L	< 0.002	0.0037	0.0024	< 0.002	0.0021	0.0020	< 0.002	< 0.002	< 0.002	---
Fluoride	mg/L	0.72	0.73	0.75	0.76	0.79	0.75	0.81	0.78	0.75	---
Lead	mg/L	< 0.0005	0.0017	< 0.005 ^	< 0.0005	< 0.001 ^	< 0.0005	< 0.002 ^	< 0.0005	< 0.0005	---
Lithium	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	---
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Molybdenum	mg/L	0.0216	0.0269	0.0202	0.0208	0.0211	0.0213	0.0198	0.0225	0.0214	---
Radium 226	pCi/L	< 0.2	0.3 ± 0.1	0.3 ± 0.1	0.2 ± 0.1	< 0.2	< 0.2	< 0.2	< 0.4	0.2 ± 0.1	---
Radium 228	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Radium 226 and 228 combined	pCi/L	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	---
Selenium	mg/L	< 0.002	< 0.002	< 0.002	< 0.01 ^	< 0.01 ^	< 0.002	< 0.01 ^	< 0.01 ^	< 0.01 ^	---
Thallium	mg/L	< 0.001 ^	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	---

Legend:

--, not analyzed

ft AMSL, feet above mean sea level

mg/L, milligrams per liter

s.u., standard units for pH

pCi/L, picocuries per liter

Laboratory Provided Qualifiers:

^ = Reporting limit elevated due to instrument performance at the lower limit of quantification (LLOQ).

Notes:

Non-detects have been listed at the reported primary quantitation limit.

Metal concentrations represent the total fraction (i.e. samples have not been filtered).

Precision is not recorded for samples with radiological concentrations below the reporting limit.

FIGURES

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