2018 Annual Groundwater Monitoring and Corrective Action Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Valmont Station

Public Service Company of Colorado

January 30, 2019

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Table of Abbreviations and Acronyms

Abbreviation	Definition
BTV	background threshold value
CCR	Coal Combustion Residuals
COI	constituent of interest
EPA	Environmental Protection Agency
LCS	Laboratory Control Samples
MS/MSD	Matrix Spike/Duplicate
QC	quality control
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
SSI	statistically significant increase
SSL	statistically significant level
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

Certification

2018 Groundwater Monitoring and Corrective Action Annual Report for Valmont Station

I hereby certify to the best of my knowledge that this groundwater monitoring and corrective action annual report is designed to meet the performance standard in 40 CFR Part 257 of the Federal Coal Combustion Residuals (CCR) Rule.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Matthew Rohr, PE
Colorado PE License 0053467
License renewal date October 31, 2019

1.0 Introduction

The U.S. Environmental Protection Agency's (EPA) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Valmont Station, located in Boulder County, Colorado (**Figure 1**), is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Valmont Station has four CCR units subject to the CCR Rule: the ash landfill, two incised bottom ash impoundments, and a former ash Settling Pond (**Figure 2**). The Settling Pond was closed in 2017 and both bottom ash impoundments were closed in 2018; all were physically closed by removal of CCR, with ongoing groundwater monitoring.

In 2018, groundwater monitoring was conducted at Valmont to collect background samples for the (closed) Settling Pond. The settling pond was categorized as inactive as of the October, 2015 effective date of the CCR Rule, and became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016 (Extension Rule). For the landfill and (closed) bottom ash impoundments, detection monitoring water quality data collected in 2017 were compared against the background threshold values (BTVs) as specified under CCR Rule Part 257.94, and groundwater monitoring was conducted for assessment monitoring as specified under Part 257.95. This Annual Groundwater Monitoring Report presents the sampling and analysis completed in 2018:

- The status of the groundwater monitoring program for the landfill at the end of 2018 is assessment monitoring, and in the process of initiating assessment of corrective measures.
- The status of the groundwater monitoring program for the (closed) bottom ash impoundments at the end of 2018 is assessment monitoring, and in the process of initiating assessment of corrective measures.
- The status of the groundwater monitoring program for the (closed) Settling Pond at the end of 2018 is in background monitoring.

2.0 Facility Description

Valmont Station is a coal-fired, steam turbine electric generating station that burned sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Valmont Station was retired from operations on September 30, 2017. During the active operations, two incised bottom ash impoundments (3A and 3B) were used for temporary storage of bottom ash prior to final disposition. Fly ash was dry handled and trucked either off site for beneficial use, or to the on-site ash landfill. The landfill is located adjacent to and north of Leggett Reservoir, and the impoundments are to the southeast of Leggett Reservoir (**Figure 2**). During operations, the impoundments were periodically dredged and the bottom ash disposed in the on-site landfill. Both impoundments were physically closed by final removal of all CCR, which was completed in September 2018; completion of CCR removal was certified by a Professional Engineer. The

CCR waste removed during closure was disposed in the on-site landfill. The landfill will continue to be used for disposal of non-CCR waste and is planned to be closed in 2021.

The Settling Pond is located on the west side of Leggett Reservoir and was constructed in 1973 with a PVC liner (**Figure 2**). It was used for bottom ash settling from 1973 to 1980. The pond was physically closed by removal of all CCR and liner material, which was completed in July 2017; completion of CCR removal was certified by a Professional Engineer. The CCR waste removed during closure was disposed in the on-site landfill.

The operation and monitoring of all the CCR units are described further in the Valmont Station Groundwater Monitoring System Certification (HDR, 2019).

2.1 Hydrogeology

2.1.1 Landfill

The ash landfill at Valmont Station is located on the flanks of Valmont Butte on weathered shale above the claystone consolidated bedrock Pierre Shale. The Pierre Shale is a claystone with interbeds of siltstone and discontinuous cemented layers of bedrock that is approximately 2,000 feet thick in this area. The thickness of weathered bedrock under the ash fill and over the bedrock varies from 5 to 15 feet. Due to the Pierre Shale thickness and low permeability, underlying formations do not receive significant recharge from above (Kumar and Associates, Inc., 2011). There is perched water beneath the landfill and coincident with the top of the Pierre Shale and the water surface of Leggett Reservoir. The shallow groundwater flow beneath the landfill follows the topography and is generally to the south-southeast in the eastern portion and to the southwest at the western portion of the landfill (**Figure 2**), as compared with the regional, deeper water table that flows to the northwest (APEX, 2008; Xcel, 2009).

2.1.2 Impoundments

The groundwater levels in monitor wells around impoundments 3A and 3B coincide with the fluctuation of the water levels in Leggett Reservoir. The reservoir and the groundwater surface around the impoundments are perched above the Pierre Shale.

2.1.3 Settling Pond

The Settling Pond is located immediately west of the Leggett Reservoir embankment on alluvial sands and silts above weathered shale and the Pierre Shale. The groundwater levels in monitor wells around the Settling Pond indicate the shallow groundwater flow is generally to the northwest.

Further hydrogeologic characterization of the site is provided in the Valmont Station Groundwater Monitoring System Certification (HDR, 2019).

2.2 Monitoring Well Network

2.2.1 Landfill

A total of six monitoring wells were originally sited at the landfill for CCR compliance: one upgradient monitoring well (MW-7) and five downgradient monitoring wells (MW-1, MW-3, MW-

4, MW-6, and MW-8) (**Figure 2**). The network is described in detail in the Groundwater Monitoring System Certification report (HDR, 2019). Shallow groundwater flows southwest and southeast under the landfill, therefore the MW-7 well location on the north side of the landfill was located to be upgradient of the landfill and serve as the background well.

In 2018, four new wells were installed at the landfill (MW-13, MW-14, MW-15, and MW-16) (**Figure 2**). Monitoring wells MW-13, MW-14, and MW-15 were installed to more thoroughly understand the groundwater gradient under the landfill and to better delineate the extents of the groundwater protection standard (GPS) exceedances in compliance with CCR Rule § 257.95(g)(1). Monitoring well MW-16 was installed at the western, downgradient facility boundary of the station property to comply with §257.95(g)(1)(iii).

In 2018, one existing well was added to the certified monitoring network for the landfill, MW-5. The well was added to more thoroughly understand the groundwater gradient under the landfill. Monitoring well MW-5 is an upgradient well, located north of all ash cells (**Figure 2**).

2.2.2 Impoundments

Five wells were sited at the bottom ash impoundments for CCR compliance. The flow of groundwater in the immediate vicinity of the impoundments (3A and 3B) appears to be controlled by the water level in Leggett Reservoir, and may flow radially out from the impoundments. Therefore, four wells (MW-9, MW-10, MW-11, MW-12) comprising a multi-unit monitoring network for the two impoundments were located along the perimeter of the impoundments to serve as downgradient wells (**Figure 2**). Each downgradient well is located at a corner of the waste boundary of the CCR units to ensure the water quality from these four locations will detect constituents from the CCR unit, if present. The fifth well, MW-1P was selected to serve as the background well based upon its location approximately 300 feet south of the impoundments and separation from the impoundments by Leggett Reservoir, as described in the Groundwater Monitoring System Certification report (HDR, 2019).

In 2018, it was necessary to abandon monitoring well MW-10 during the closure and regrading of the impoundments. The upgradient well (MW-1P) and three wells (MW-9, MW-11, and MW-12) remain around the closed impoundments for groundwater monitoring.

2.2.3 Settling Pond

In 2018, four wells (MW-17, MW-18, MW-19, MW-20) were installed around the perimeter of the (closed) Settling Pond for CCR compliance (**Figure 2**). The groundwater flow direction beneath the pond in the shallow aquifer was unknown at the time of well installation. The east side of the pond is constrained by the reservoir embankment, thus the four wells were sited around the other three sides of the pond to capture upgradient and downgradient conditions at the pond.

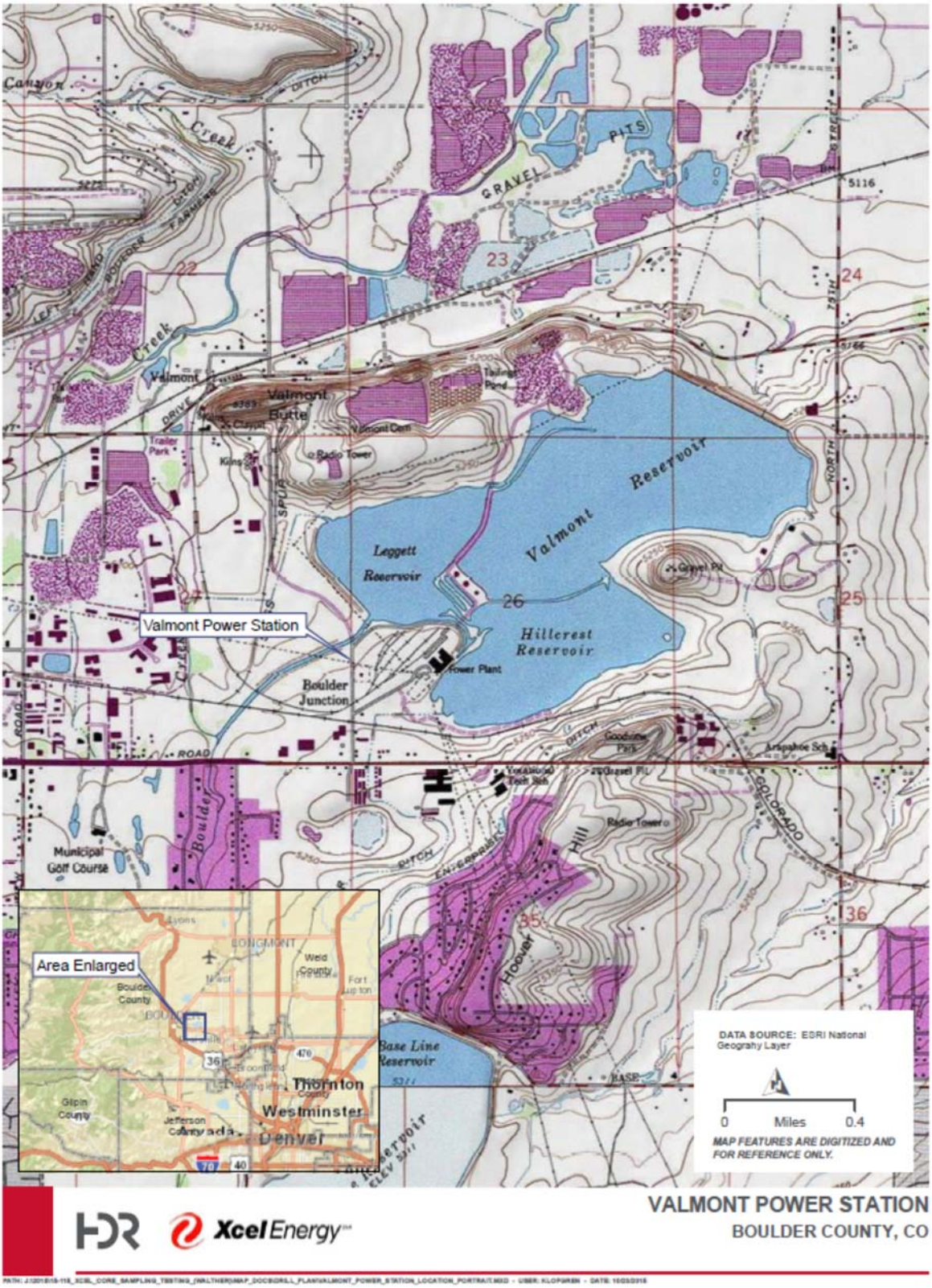


Figure 1. Vicinity map for Valmont Station.

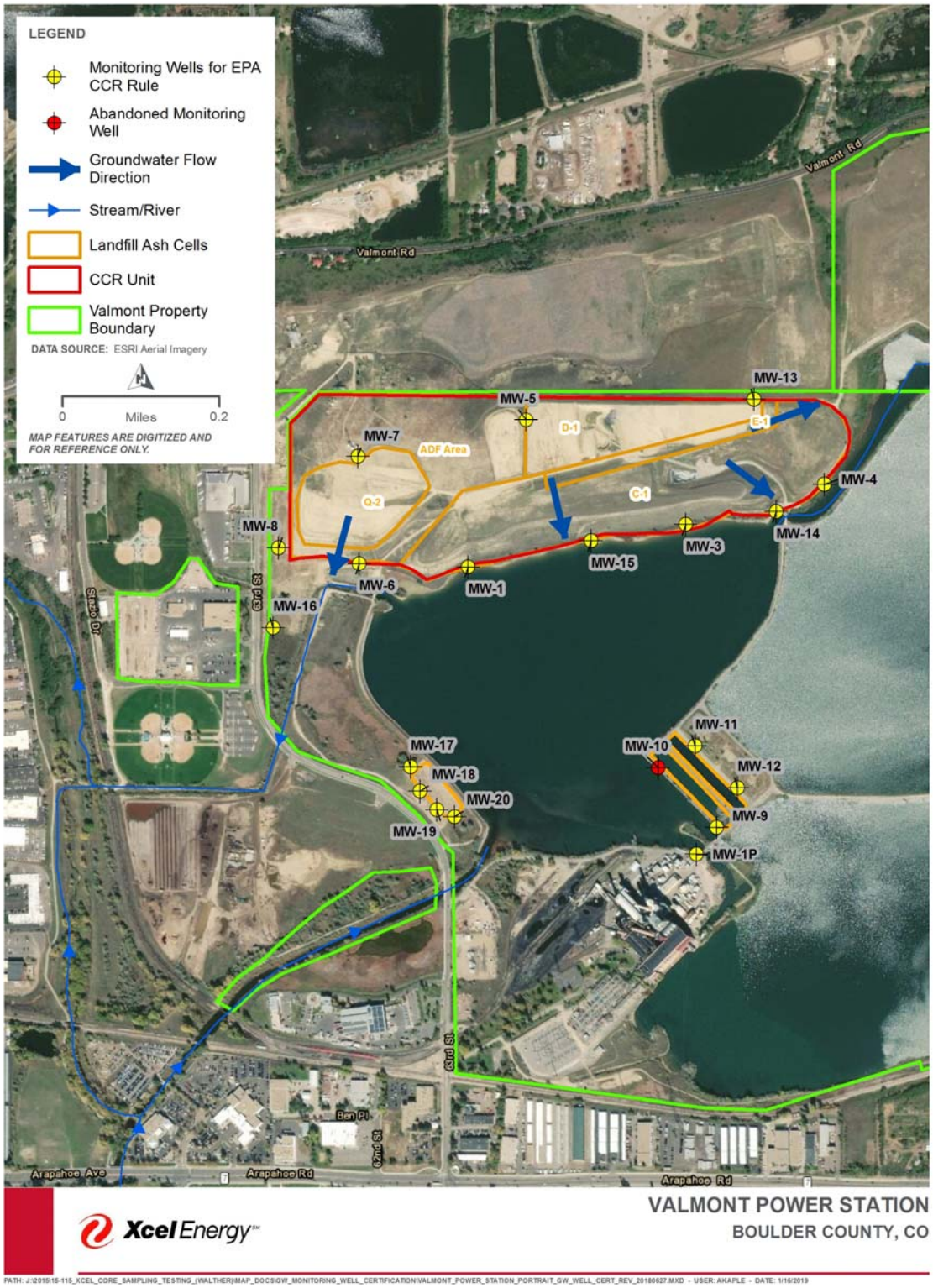


Figure 2. Valmont Station – CCR units and monitoring well location map.

3.0 Monitoring

3.1 Frequency

3.1.1 Landfill

In the January 15, 2018 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well at the landfill were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). The SSIs triggered the assessment monitoring program for the landfill. The initial assessment monitoring event was completed February 21-28, 2018 to sample all of the monitoring wells around the landfill for Appendix IV constituents (**Table 1**). Samples were collected from the original landfill monitoring network of wells (MW-1, MW-3, MW-4, MW-6, MW-7, and MW-8). All Appendix IV constituents were detected in at least one well with the exception of antimony, mercury, and thallium.

On May 25, 2018, the first semi-annual assessment monitoring samples were collected from landfill wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the original landfill monitoring network of wells (MW-1, MW-3, MW-4, MW-6, MW-7, and MW-8). **Table 2** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))). **Appendix A** provides the distinctions for the different types of monitoring events and the CCR Rule Part under which the monitoring event was conducted.

On August 9-14, 2018 an additional assessment monitoring event was conducted (**Table 2**). Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. This sample event was performed in accordance with 257.95(g)(1) after additional landfill monitoring wells were installed in order to better evaluate the extent of any GPS exceedances both at the landfill waste boundary and at the facility boundary. The landfill monitoring wells added to the monitoring network in August include MW-5, MW-13, MW-14, MW-15, and MW-16.

On November 26-29, 2018, the second semi-annual assessment monitoring event was conducted at all of the landfill wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the amended landfill monitoring network of wells (MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-13, MW-14, MW-15, and MW-16).

Table 1. Groundwater quality parameters	
Appendix III Constituents for Detection Monitoring	**Appendix IV Constituents for Assessment Monitoring**
Boron	Antimony
Calcium	Arsenic
Chloride	Barium
Fluoride	Beryllium
pH	Cadmium
Sulfate	Chromium
Total Dissolved Solids (TDS)	Cobalt
Additional Parameters	Fluoride
Total Suspended Solids (TSS)	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 combined

Table 2. Number and dates of groundwater samples collected for each well and the required monitoring programs for the Valmont Landfill (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
MW-1	Downgradient	February 27, 2018	Initial Assessment Monitoring
		May 23, 2018	Semi-Annual Assessment Monitoring
		August 9, 2018	Release Characterization Assessment Monitoring
		November 27, 2018	Semi-Annual Assessment Monitoring
MW-3	Downgradient	February 21, 2018	Initial Assessment Monitoring
		May 23, 2018	Semi-Annual Assessment Monitoring
		August 2, 2018	Release Characterization Assessment Monitoring
		November 27, 2018	Semi-Annual Assessment Monitoring
MW-4	Downgradient	February 28, 2018	Initial Assessment Monitoring
		May 23, 2018	Semi-Annual Assessment Monitoring
		August 13, 2018	Release Characterization Assessment Monitoring
		November 28, 2018	Semi-Annual Assessment Monitoring
MW-5	Upgradient / Background	August 13, 2018	Release Characterization Assessment Monitoring
		November 29, 2018	Semi-Annual Assessment Monitoring
MW-6	Downgradient	February 28, 2018	Initial Assessment Monitoring
		May 23, 2018	Semi-Annual Assessment Monitoring
		August 14, 2018	Release Characterization Assessment Monitoring
		November 29, 2018	Semi-Annual Assessment Monitoring
MW-7	Upgradient / Background	February 21, 2018	Initial Assessment Monitoring
		May 22, 2018	Semi-Annual Assessment Monitoring
		August 9, 2018	Release Characterization Assessment Monitoring
		November 28, 2018	Semi-Annual Assessment Monitoring
MW-8	Downgradient	February 28, 2018	Initial Assessment Monitoring
		May 23, 2018	Semi-Annual Assessment Monitoring
		August 9, 2018	Release Characterization Assessment Monitoring
		November 29, 2018	Semi-Annual Assessment Monitoring
MW-13	Downgradient	August 9, 2018	Release Characterization Assessment Monitoring
		November 28, 2018	Semi-Annual Assessment Monitoring
MW-14	Downgradient	August 13, 2018	Release Characterization Assessment Monitoring
		November 27, 2018	Semi-Annual Assessment Monitoring
MW-15	Downgradient	August 13, 2018	Release Characterization Assessment Monitoring
		November 27, 2018	Semi-Annual Assessment Monitoring
MW-16	Downgradient	August 14, 2018	Release Characterization Assessment Monitoring
		November 28, 2018	Semi-Annual Assessment Monitoring

3.1.2 Bottom Ash Impoundments

In the January 15, 2018 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well at the bottom ash impoundments were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). The SSIs triggered the assessment monitoring program for the two impoundments. The initial assessment monitoring event was completed February 22-23, 2018 to sample all of the monitoring wells around the impoundments for Appendix IV constituents (**Table 1**). Samples were collected from the monitoring network of wells (MW-1P, MW-9, MW-10, MW-11, and MW-12) . All Appendix IV constituents were detected in at least one well with the exception of antimony, beryllium, cadmium, chromium, mercury, selenium, and thallium.

On May 22, 2018, first semi-annual assessment monitoring samples were collected from all of the impoundment monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the monitoring network of wells (MW-1P, MW-9, MW-11, and MW-12); well MW-10 had to be abandoned during impoundments closure. Closure of the two CCR impoundments was initiated in April 2018. Removal of CCR, and all areas affected by releases of CCR, was completed in September 2018. **Table 3** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

On September 17, 2018, a closure confirmation sampling event was conducted at the remaining four impoundment wells. Samples were analyzed for Appendix IV COIs. Samples were collected from the monitoring network of wells (MW-9, MW-11, and MW-12).The upgradient monitoring well MW-1P was dry during this sample event.

On November 26-29, 2018, the second semi-annual assessment monitoring event was conducted at the four impoundment wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the monitoring network of wells (MW-9, MW-11, and MW-12).The upgradient monitoring well MW-1P was dry during this sample event.

Table 3. Number and dates of groundwater samples collected for each well and the required monitoring programs for the Valmont (Closed) Bottom Ash Impoundments (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
MW-1P	Background	Dry	Assessment Monitoring
MW-9	Downgradient	February 22, 2018	Initial Assessment Monitoring
		May 22, 2018	Semi-Annual Assessment Monitoring
		September 17, 2018	Closure Confirmation Monitoring
		November 26, 2018	Semi-Annual Assessment Monitoring (Post-CCR Removal)
MW-10*	Downgradient	February 22, 2018	Initial Assessment Monitoring
MW-11	Downgradient	February 22, 2018	Initial Assessment Monitoring
		May 22, 2018	Semi-Annual Assessment Monitoring
		September 17, 2018	Closure Confirmation Monitoring
		November 26, 2018	Semi-Annual Assessment Monitoring (Post-CCR Removal)
MW-12	Downgradient	February 23, 2018	Initial Assessment Monitoring
		May 22, 2018	Semi-Annual Assessment Monitoring
		September 17, 2018	Closure Confirmation Monitoring
		November 26, 2018	Semi-Annual Assessment Monitoring (Post-CCR Removal)

*Abandoned in March 2018 during impoundments closure.

3.1.2 Settling Pond

As stipulated in the Direct Final Rule (Extension Rule), eight rounds of background groundwater sampling were initiated in 2018 for the (closed) Settling Pond, to be completed before April 17, 2019. Sampling frequency was conducted on an approximate three week frequency, beginning in June 2018, for collection of seven samples in 2018. Samples were analyzed for Appendix III and IV COIs plus TSS. **Table 4** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

Table 4. Number and dates of groundwater samples collected in 2018 for each well and the required monitoring programs for the (closed) Valmont Settling Pond (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
MW-17	Downgradient	August 3, 2018 August 27, 2018 September 14, 2018 October 9, 2018 October 30, 2018 November 29, 2018 December 13, 2018	Background Monitoring (Post-CCR Removal)
MW-18	Downgradient	August 3, 2018 August 27, 2018 September 14, 2018 October 9, 2018 October 30, 2018 November 28, 2018 December 13, 2018	Background Monitoring (Post-CCR Removal)
MW-19	Downgradient	August 3, 2018 August 27, 2018 September 14, 2018 October 9, 2018 October 30, 2018 November 28, 2018 December 13, 2018	Background Monitoring (Post-CCR Removal)
MW-20	Upgradient / Background	August 3, 2018 August 27, 2018 September 14, 2018 October 9, 2018 October 30, 2018 November 29, 2018 December 13, 2018	Background Monitoring (Post-CCR Removal)

3.2 Water Levels and Sample Collection

Water levels were collected in each well prior to sample collection. Groundwater sample collection protocols follow the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2015). The water samples were collected using a submersible Geotech SS Geosub pump or bailer, and the equipment was decontaminated between wells following protocols outlined in the Sampling SOP. Each well was purged until field parameters stabilized in accordance with the sampling SOP. In accordance with the CCR Rule, groundwater samples were not field filtered. The field parameters of turbidity, pH, and temperature were measured using a YSI Professional Plus (or an equivalent) portable water quality instrument that was calibrated prior to use each day of sampling. The results of field measurements were recorded on a field data form, which is maintained as part of the field sampling records. For quality control, one field duplicate sample and one field equipment blank sample was collected during each sample event. Water samples were delivered under Chain of Custody to TestAmerica in Denver, Colorado.

3.3 Analytical Testing

Groundwater samples for each type of monitoring were analyzed for the COIs shown in **Appendix A and listed in Table 1**. Background monitoring analyses include all of the parameters in Appendices III and IV of CCR Rule Part 257, plus TSS. Initial assessment monitoring, and subsequent annual assessment monitoring samples are analyzed for all

Appendix IV COIs to determine what COIs are detected. The semi-annual assessment monitoring samples are analyzed for all Appendix III and detected Appendix IV COIs. Which COIs were detected at each facility is described in Section 4.2. The laboratory analyzed matrix spike/matrix spike duplicates at a rate of 5 percent, per laboratory quality control procedures.

3.4 Data Validation and Data Management

Data validation and data management tasks were performed per the Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule (HDR, 2017). Data validation was conducted to eliminate data that did not meet validation criteria, and designate a data qualifier for any data quality limitation discovered.

All samples and quality control (QC) were reviewed and evaluated, and no samples were rejected. Most QC analyses were within reportable limits; however, when QC was outside limit controls, samples were reported as estimated. Relative percent difference (RPD) failures for field duplicate analyses were slightly greater than the 20 percent limit criteria. Laboratory Control Sample (LCS)/LCS duplicates and Matrix Spike/Duplicate (MS/MSD) duplicates %RPD recoveries all were within control limits. Data analyses required minimal qualifications, and all data were usable, even when qualified.

4.0 Monitoring Results

4.1 Water Levels and Groundwater Flow Direction

The water levels at monitoring wells were recorded during monitoring events. The water levels and contour map (**Appendix B**) confirm that monitoring wells MW-7 and MW-5 are located upgradient of the landfill and are appropriate to represent background water quality. Groundwater flow under the landfill was generally to the south southwest in the western portion of the landfill, and to the southeast and east in the eastern portion of the landfill.

The flow of groundwater in the downgradient wells immediately adjacent to the impoundments (MW-9, MW-10, MW-11, and MW-12) and the upgradient well MW-1P are controlled by Leggett Reservoir water level. There was hydraulic connectivity between the impoundments and the reservoir, thus the water table is relatively flat at the impoundments. The reservoir was lowered significantly in 2018 during closure of the impoundments. Well MW-1P is also influenced by the Leggett Reservoir, but is located approximately 300 feet south of the impoundments and therefore is located upgradient or at a side gradient, but is sufficient to serve as the background well for the impoundments monitoring.

The water levels and contour map (**Appendix B**) confirm that monitoring well MW-20 is located upgradient of the (closed) Settling Pond and is appropriate to represent background water quality for that CCR unit. The groundwater elevation at MW-19 is approximately 30 feet lower than the other Settling Pond wells. The reason is unknown; however it is likely the result of the well screen being located in a tighter portion of the Pierre Shale formation, which does not represent overall aquifer conditions. Groundwater flow under the Settling Pond is generally to the north northwest.

4.2 Water Quality

4.2.1 Landfill

As stipulated in the CCR Rule, eight rounds of background groundwater sampling and detection monitoring were completed before October 17, 2017 for the landfill. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2018). The first detection monitoring event was conducted on September 12-14, 2017. In the January 15, 2018 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well at the landfill were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). These SSIs triggered the assessment monitoring program for the landfill. As stipulated in CCR Rule 257.95(b), within 90 days of the SSI determination an initial assessment monitoring event must be completed. This was completed in February 2018 and consisted of sampling the original network of landfill monitoring wells for Appendix IV constituents (**Table 1**). Laboratory reports are provided in **Appendix C**. All Appendix IV constituents were detected in at least one well with the exception of antimony, mercury, and thallium. The list of detected Appendix IV COIs for landfill assessment monitoring and for which GPS were established include:

- arsenic,
- barium,
- beryllium,
- cadmium,
- chromium,
- cobalt,
- fluoride,
- lead,
- lithium,
- molybdenum,
- selenium, and
- combined radium 226/228.

In accordance with CCR Rule 257.95(h), GPS were established for each detected Appendix IV COI and documented in the October 10, 2018 memorandum *Groundwater Protection Standards and Determination of SSLs per 257.95(g)*. For each detected COI, **Table 5** lists the EPA established MCL from 40 CFR 141.62 and 141.66, the BTV (upper tolerance limit) for the Valmont landfill, and the GPS.

On May 25, 2018, the second assessment monitoring samples (first semi-annual assessment monitoring) were collected from the original network of landfill monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports are provided in **Appendix C**. In accordance with CCR Rule 257.95(e), downgradient well concentrations from the second assessment monitoring event were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS and were found to exceed GPS. Therefore, in accordance with CCR Rule 257.95(g), downgradient well concentrations were statistically evaluated to determine “if one or more constituents in appendix IV to this part are detected at statistically significant levels above the groundwater protection standard.” As described in *Groundwater Protection Standards and*

Determination of SSLs per 257.95(g) downgradient well MW-4 was found to have concentrations of lithium and selenium at SSLs above the GPS; and downgradient well MW-8 had concentrations of lithium at SSLs above the GPS.

Table 5. Groundwater Protection Standards for Detected Appendix IV COIs for the Landfill 257.95(d)(3)

Constituent	Unit	MCL	BTV (UTL)	GPS
Fluoride	mg/l	4.00	0.787	4.00
Arsenic	mg/l	0.0100	0.00700	0.0100
Barium	mg/l	2.00	0.110	2.00
Beryllium	mg/l	0.00400	0.000720	0.00400
Cadmium	mg/l	0.00500	0.0310	0.0310
Chromium, Total	mg/l	0.100	0.0876	0.100
Cobalt	mg/l	0.00600*	0.00795	0.00795
Lead	mg/l	0.0150*	0.0228	0.0228
Lithium	mg/l	0.0400*	0.0830	0.0830
Molybdenum	mg/l	0.100*	0.0280	0.100
Radium-226-228	pci/l	5.0^	4.55	5.0
Selenium	mg/l	0.0500	0.0203	0.0500

*EPA adopted health-based value in place of MCL.
^Colorado Water Quality Regulation

Part 257.95(g)(1)(iii) requires that at least one additional monitoring well at the facility boundary be installed and sampled in the direction of contaminant migration after the SSL above GPS is detected. Monitoring well MW-16 was installed pursuant to this to monitor the downgradient facility boundary. Monitoring wells MW-13, MW-14, and MW-15 were installed and existing well MW-5 was also added to the CCR well network per 257.95(g)(1).

On August 9-14, 2018 an additional assessment monitoring event was conducted in accordance with 257.95(g)(1). This event included sampling the additional landfill monitoring wells installed in order to better evaluate the extent of any GPS exceedances both at the landfill waste boundary and at the facility boundary. Samples were collected from the wells added to the monitoring network (MW-5, MW-13, MW-14, MW-15, and MW-16) and the existing landfill wells (MW-1, MW-3, MW-4, MW-6, MW-7, and MW-8) and were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports are provided in **Appendix C**.

On November 26-29, 2018, the second semi-annual assessment monitoring samples were collected from the amended network of landfill monitoring wells (all wells listed in **Table 2**). Samples were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports for this event had not been received as of the end of 2018

In 2019, Xcel will initiate and complete the assessment of corrective measures in accordance with 257.96 and continue to monitor groundwater in accordance with the assessment monitoring program and consistent with 257.93(e).

4.2.2 Impoundments

As stipulated in the CCR Rule, eight rounds of background groundwater sampling and detection monitoring were completed before October 17, 2017 for the impoundments. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2018). The first detection monitoring event was conducted on September 12-14, 2017. In the January 15, 2018 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). These SSIs triggered the assessment monitoring program for the impoundments. As stipulated in CCR Rule 257.95(b), within 90 days of the SSI determination an initial assessment monitoring event must be completed. This was completed in February 2018 and consisted of sampling all of the monitoring wells around the impoundments for Appendix IV constituents. Laboratory reports are provided in **Appendix C**. The Appendix IV constituents that were not detected in at least one well were antimony, beryllium, cadmium, chromium, mercury, selenium, and thallium. The list of detected Appendix IV COIs for assessment monitoring and for which GPS were established include:

- arsenic,
- barium,
- cobalt,
- fluoride,
- lead,
- lithium,
- molybdenum, and
- combined radium 226/228.

In accordance with CCR Rule 257.95(h), GPS were established for each detected Appendix IV COI and documented in the October 10, 2018 memorandum *Groundwater Protection Standards and Determination of SSLs per 257.95(g)*. For each detected COI, **Table 6** lists the EPA established MCL from 40 CFR 141.62 and 141.66, the BTV (upper tolerance level) for the Valmont impoundments, and the GPS.

On May 22, 2018, the second assessment monitoring samples (first semi-annual assessment monitoring sample event) were collected from all of the impoundment wells (except MW-10 had been abandoned during impoundment closure). Samples were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports are provided in **Appendix C**. In accordance with CCR Rule 257.95(e), downgradient well concentrations from the second assessment monitoring event were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS and were found to exceed GPS. Therefore, in accordance with CCR Rule 257.95(g), downgradient well concentrations were statistically evaluated to determine “if one or more constituents in appendix IV to this part are detected at statistically significant levels above the groundwater protection standard.” As described in *Groundwater Protection Standards and Determination of SSLs per 257.95(g)* downgradient wells MW-9, MW-11, and MW12 were found to have concentrations of cobalt at SSLs above the GPS; and downgradient well MW-9 had concentrations of molybdenum at SSLs above the GPS.

Table 6. Groundwater Protection Standards for Detected Appendix IV COIs for the Bottom Ash Impoundments 257.95(d)(3)

Constituent	Unit	MCL	BTV (UTL)	GPS
Fluoride	mg/l	4.00	1.30	4.00
Arsenic	mg/l	0.0100	0.0107	0.0107
Barium	mg/l	2.00	0.330	2.00
Cobalt	mg/l	0.00600*	0.00530	0.00600
Lead	mg/l	0.0150*	0.00327	0.0150
Lithium	mg/l	0.0400*	0.0176	0.0400
Molybdenum	mg/l	0.100*	0.0267	0.100
Radium-226-228	pci/l	5.0^	1.07	5.0

*EPA adopted health-based value in place of MCL.
^Colorado Water Quality Regulation.

Part 257.95(g)(1)(iii) requires that at least one additional monitoring well at the facility boundary be installed and sampled in the direction of contaminant migration after the SSL above GPS is detected. Monitoring well MW-16 was installed pursuant to this, as described above for the landfill (Section 4.2.1). An additional monitoring well at the facility boundary for the impoundments is not warranted due to the location of the impoundments on an island surrounded by the Leggett, Valmont, and Hillside reservoirs and observed direct hydraulic communication with the reservoirs. Therefore any impacts from the impoundments would not be detectable at an additional well at the facility boundary.

Closure of the two CCR impoundments was initiated in April 2018. Removal of CCR, and all areas affected by releases of CCR was completed in September 2018. Although closure of the impoundments was conducted per 257.102(e)(i) and prior to determination of any SSLs over GPS, removal of CCR from the impoundments was essentially implementing corrective action. The CCR material has been completely removed from the former impoundments, and concentrations of CCR constituents are expected to decrease through natural attenuation. All groundwater monitoring at the impoundments occurring after September 2018 reflects new conditions after the CCR waste was removed.

On September 17, 2018 a closure confirmation monitoring event was completed and samples were collected from all of the impoundment wells (MW-1P, MW-9, MW-11, and MW-12). Samples were analyzed for Appendix III and Appendix IV COIs. Laboratory reports are provided in **Appendix C**.

On November 26-29, 2018, the second semi-annual assessment monitoring samples were collected from the impoundment monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports for this event had not been received as of the end of 2018.

In 2019, PSCo will continue to monitor groundwater in accordance with the assessment monitoring program to evaluate whether clean closure criteria in groundwater have been met.

4.2.3 Settling Pond

Seven groundwater sampling events of both upgradient and downgradient wells at the settling pond occurred between August 27, 2018 and the end of 2018 for background monitoring. At the settling pond, all four wells (MW-17, MW-18, MW-19, and MW-20) were sampled during the seven events. Groundwater was analyzed for CCR Rule Appendix III and IV COIs. Laboratory reports are provided in **Appendix C**. Background monitoring will be completed in early 2019, and statistical evaluation will be conducted to calculate a background threshold value (BTV) for each Appendix III COI before April 17, 2019. The first detection monitoring will occur prior to April 17, 2019, and results will be evaluated to determine if there is an SSI of any Appendix III COI. Closure of the Settling Pond per 257.102(e)(i) was completed in September 2017, with removal of CCR, and all areas affected by releases of CCR. Therefore it is important to note that all groundwater monitoring at the settling pond reflects conditions after the CCR waste was removed.

5.0 Summary

The following observations are based on CCR Rule compliance monitoring data collected during the 2018 and prior sample events:

Landfill

- Detection monitoring data from the landfill was statistically evaluated and SSIs over background were detected at wells MW-1, MW-3, MW-4, MW-6, and MW-8.
- All six of the original certified well network for the landfill were sampled in February 2018 for the first assessment monitoring event to determine the detected Appendix IV COIs.
- All six of the original certified well network for the landfill were sampled in May 2018 for the first semi-annual assessment monitoring event.
- GPS were established for all detected Appendix IV constituents.
- Assessment monitoring data from the landfill was statistically evaluated and SSLs above the GPS were observed at MW-4 and MW-8.
- Four new wells (MW-13, MW-14, MW-15, and MW-16) were installed and one existing well (MW-5) was added to the certified well network for the landfill, and all landfill wells were sampled in August 2018.
- All 11 of the wells that make up the amended certified well network for the landfill were sampled in November 2018 for semi-annual assessment monitoring.
- Groundwater flow direction under the landfill is to the southwest in the west part of the landfill, to the south in the middle and to the southeast and east in the eastern part of the landfill.
- Valmont Station landfill status at the end of 2018 is assessment monitoring and in the process of initiating assessment of corrective measures, and will continue those activities into 2019.

(Closed) Bottom Ash Impoundments

- Detection monitoring data from the impoundments was statistically evaluated and SSIs over background were detected at wells MW-9, MW-10, MW-11, and MW-12.
- All certified well network wells for the impoundments were sampled in February 2018 for the first assessment monitoring event to determine the detected Appendix IV COIs.
- It was necessary to abandon monitoring well MW-10 in 2018 during impoundment closure, and the certified well network now includes three down gradient wells.
- The certified well network wells for the impoundments were sampled in May 2018 for the first semi-annual assessment monitoring event.
- GPS were established for all detected Appendix IV constituents.
- Assessment monitoring data from the impoundments was statistically evaluated and statistically significant levels above the GPS were observed at MW-9, MW-11, and MW-12.
- All monitoring wells for the impoundments were sampled in November 2018 for semi-annual assessment monitoring.
- All CCR waste was removed from the impoundments by September 2018. Groundwater monitoring will continue in 2019 and will evaluate the post-clean closure/corrective action groundwater quality.
- Valmont Station impoundment status at the end of 2018 is assessment monitoring and in the process of initiating assessment of corrective measures and will continue those activities into 2019 while continuing to evaluate whether clean closure criteria in groundwater have been met.

(Closed) Settling Pond

- All CCR waste was removed from the Settling Pond by July 21, 2017.
- Four CCR certified Settling Pond network wells were installed in 2018.
- All of the CCR monitoring wells that make up the certified well network for the Settling Pond were sampled 7 times between August and December 2018 for background water quality. Background water quality monitoring will continue into 2019.
- Groundwater flow direction under the Settling Pond is generally to the north northwest.
- Valmont Station Settling Pond current status is in background monitoring; however because the pond has been closed all monitoring reflects post-corrective action waste removal. Once background monitoring has been completed, the Settling Pond network will transition to detection monitoring and to evaluate whether clean closure criteria in groundwater have been met.

6.0 References

APEX Consulting Services, Inc. 2008. Letter to Jennifer McCarter, Xcel Energy. Valmont Station Ash Disposal Facility Additional Monitoring Well Installation. February 11, 2008.

HDR, 2015. Groundwater Sample Collection Standard Operating Procedure. October 28, 2015.

HDR, 2018. Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule. Updated January 15, 2018.

HDR, 2019. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Valmont Station. May 4, 2016.

Xcel Energy, 2009. Valmont Station Coal Ash Disposal Facility Design and Operations Plan. January 2009.

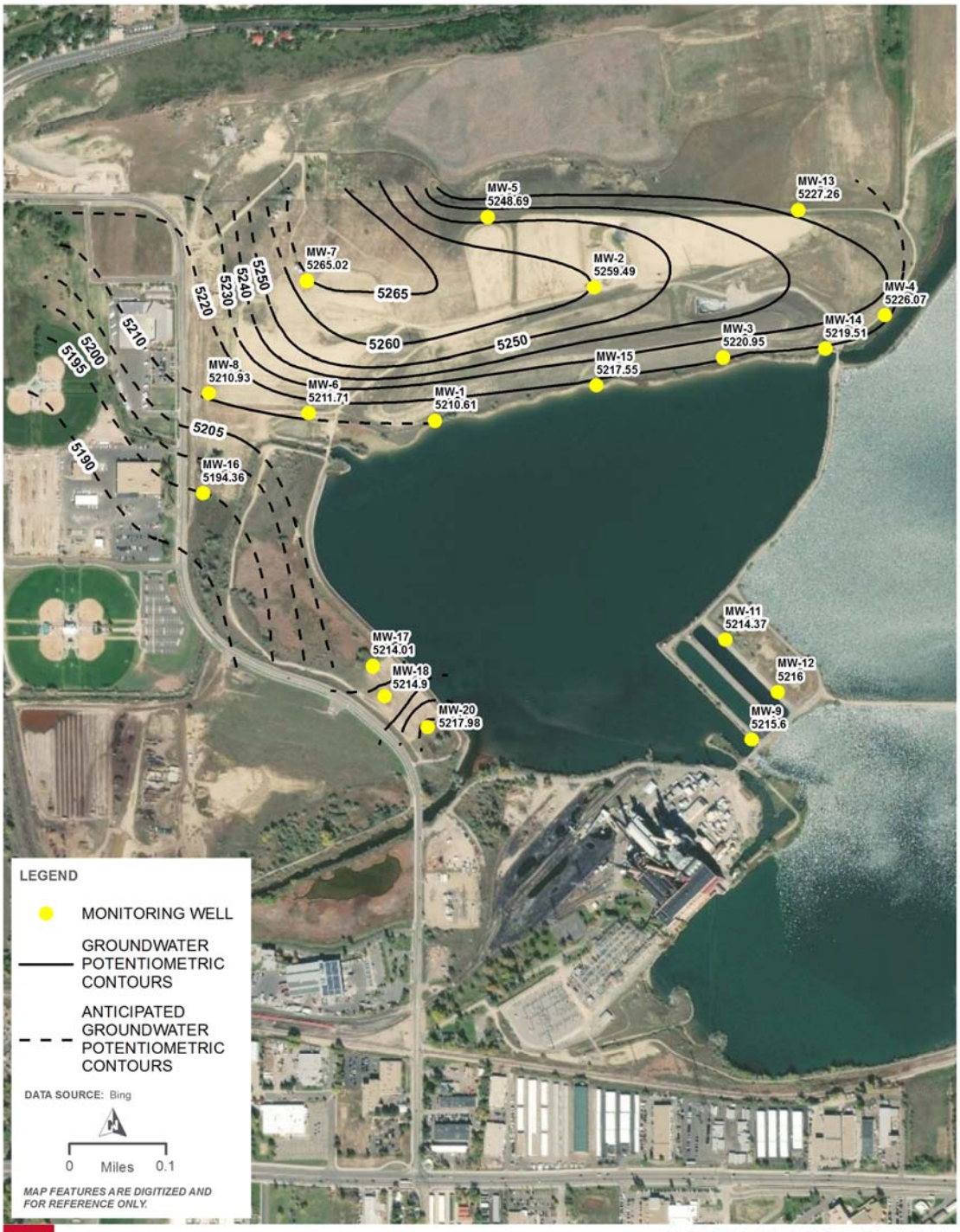
Appendix A

Monitoring types to comply with specific CCR Rule requirements

Monitoring types to comply with specific CCR Rule requirements			
Type of Monitoring	**Description**	**CCR Rule Reference**	**Constituents Analyzed**
Background Monitoring	Development of background water quality conditions for Appendix III and Appendix IV COIs	257.94(b)	Appendix III and IV and TSS
Detection Monitoring	Semi-annual detection monitoring for Appendix III COIs	257.94(c)	Appendix III
Assessment Monitoring	Detailed types below.	257.95	Detailed types below.
➢ Initial Assessment	Determining detected Appendix IV COIs	257.95(b)	Appendix IV
➢ Semi-Annual Assessment	Semi-annual assessment monitoring for Appendix III and detected Appendix IV COIs	257.95(d)	Appendix III and detected Appendix IV plus TSS
➢ Annual Assessment	Determining detected Appendix IV COIs on an annual basis. Starting in 2019 this will also count as the semi-annual sample event.	257.95(b)	Appendix III and all Appendix IV plus TSS
➢ Release Characterization Assessment	Occurs after detection of SSL above the GPS for the purpose of characterizing the nature and extent of the release.	257.95(g)(1)(iv)	Appendix III and detected Appendix IV plus TSS
➢ Corrective Action Assessment	Occurs after a facility has initiated corrective action. This is an PSCo designation (not in the Rule) added to Assessment Monitoring to differentiate that the samples were collected after the corrective action has been implemented.	N/A	Appendix III and detected Appendix IV plus TSS
Post-CCR Removal Monitoring	Occurs after the facility has been physically closed (e.g. all CCR waste removed from the impoundment). This is an PSCo designation added to other types of monitoring (e.g. Background Monitoring or Detection Monitoring.	N/A	Appendix III and/or Appendix IV as applicable plus TSS
Closure Confirmation Monitoring	Occurs after the facility has been closed (e.g. all CCR waste removed from the impoundment) in compliance with CCR Rule for certification of Clean Closure.	257.102	Appendix IV

Appendix B

Potentiometric Surface Map


MW-5
5248.69
MW-13
5227.26
MW-7
5265.02
MW-2
5259.49
MW-4
5226.07
MW-3
5220.95
MW-14
5219.51
MW-15
5217.55
MW-8
5210.93
MW-6
5211.71
MW-1
5210.61
MW-16
5194.36
MW-11
5214.37
MW-17
5214.01
MW-12
5216
MW-18
5214.9
MW-20
5217.98
MW-9
5215.6
5265
5260
5250
5240
5230
5220
5210
5200
5195
5205
5190
LEGEND
MONITORING WELL
GROUNDWATER POTENTIOMETRIC CONTOURS
ANTICIPATED GROUNDWATER POTENTIOMETRIC CONTOURS
DATA SOURCE: Bing
0 Miles 0.1
MAP FEATURES ARE DIGITIZED AND FOR REFERENCE ONLY.
Xcel Energy
VALMONT POWER STATION
BOULDER COUNTY, CO
PATH: J:\2015\15-115_XCEL_CORE_SAMPLING_TESTING_(WALTHER)\MAP_DOCS\GROUNDWATER_CONTOURS\VALMONT_POWER_STATION_PORTAIT_GW_20190108.MXD - USER: AKAPLE - DATE: 1/28/2019

Appendix C

Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-106812-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
3/28/2018 4:38:05 PM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-106812-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-106812-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 2/28/2018 at 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.2º C, 2.4º C, 4.5º C, 4.6º C and 5.2º C.

The laboratory received three 1L Nitric preserved plastic containers and one 1L unpreserved plastic container for the following sample, rather than two 1L Nitric preserved plastic containers and two 1L unpreserved plastic containers as received for all other samples: MW-7 (280-106812-1). There is sufficient volume to perform the requested analyses. The client was notified on 3/1/18.

The Chain-of-Custody (COC) was incorrect as received. Several additional analyses were requested on the COC, however per client discussions on 3/1/18, they are not required. The following analyses were logged per discussions, following the Appendix IV analysis list: 2540D - TSS, 6020A - Appendix IV Total Metals, 7470A - Total Mercury, 9056A_28D - Fluoride, 9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC. The client was notified on 3/1/18.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 03/05/2018 and analyzed on 03/06/2018 and 03/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 03/12/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/01/2018.

Job ID: 280-106812-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following samples were received with insufficient time remaining to perform the analysis within holding time: MW-7 (280-106812-1), MW-3 (280-106812-3). It is TestAmerica's policy to analyze all samples within holding times; however, the laboratory cannot guarantee that hold times will be met when samples are received with less than half the hold time remaining.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-106739-1. Sample non-homogeneity is suspected.

The following sample was diluted due to slow filtration and high suspended solids: MW-4 (280-106812-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 03/20/2018 and 03/21/2018.

Sample MW-4 (280-106812-4)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/05/2018 and analyzed on 03/27/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP, MS, MSD) associated with batch 160-353927.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/05/2018 and analyzed on 03/16/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP, MS, MSD) associated with batch 160-353931.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-7 (280-106812-1), MW-1 (280-106812-2), MW-3 (280-106812-3), MW-4 (280-106812-4), MW-6 (280-106812-5), MW-8 (280-106812-6), MW-9 (280-106812-7), MW-10 (280-106812-8), MW-11 (280-106812-9), MW-12 (280-106812-10), MW-11FD (280-106812-11) and MW-8EB (280-106812-12) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 03/28/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-7 — Lab Sample ID: 280-106812-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00096	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.024		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00032	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00037	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0010	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0046	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00052	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0043	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.036		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.39	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	4.8	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-1 — Lab Sample ID: 280-106812-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.075		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00026	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0010		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0043		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.017		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00093	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.00090	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.029		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.36	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	160		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 280-106812-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.012		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00049	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0023		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0011	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0010	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-3 (Continued) — Lab Sample ID: 280-106812-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.079		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.15	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	11	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 280-106812-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0035	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.070		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00040	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00032	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0071		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.011		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.018		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0048		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.22		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.22		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	3.7		1.0	0.12	mg/L	2		9056A	Total/NA
Total Suspended Solids	1100		20	5.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6 — Lab Sample ID: 280-106812-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.038		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00046	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0023		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00070	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.061		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.16	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-106812-6

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-106812-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.019		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0013		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0023		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Lead	0.00071	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0086		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.13		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	28		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-106812-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0019	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.042		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0092		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.14		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.024		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 280-106812-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.044		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0082		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.22		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	3.3		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-11 — Lab Sample ID: 280-106812-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0063		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.020		0.0010	0.00019	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-11 (Continued) — Lab Sample ID: 280-106812-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.021		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00072	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.016		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	1.7		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	14		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-12 — Lab Sample ID: 280-106812-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.041		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0048		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Fluoride	0.47	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	24		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-11FD — Lab Sample ID: 280-106812-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0073		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.020		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.020		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00077	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.015		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	1.7		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	20		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8EB — Lab Sample ID: 280-106812-12

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-106812-1	MW-7	Water	02/21/18 12:55	02/28/18 11:45
280-106812-2	MW-1	Water	02/27/18 09:30	02/28/18 11:45
280-106812-3	MW-3	Water	02/21/18 15:25	02/28/18 11:45
280-106812-4	MW-4	Water	02/28/18 09:35	02/28/18 11:45
280-106812-5	MW-6	Water	02/27/18 12:30	02/28/18 11:45
280-106812-6	MW-8	Water	02/27/18 10:30	02/28/18 11:45
280-106812-7	MW-9	Water	02/22/18 13:30	02/28/18 11:45
280-106812-8	MW-10	Water	02/22/18 11:40	02/28/18 11:45
280-106812-9	MW-11	Water	02/22/18 15:15	02/28/18 11:45
280-106812-10	MW-12	Water	02/23/18 09:55	02/28/18 11:45
280-106812-11	MW-11FD	Water	02/22/18 15:15	02/28/18 11:45
280-106812-12	MW-8EB	Water	02/27/18 11:20	02/28/18 11:45

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:25	1
Arsenic	**0.00096**	**J**	0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:25	1
Barium	**0.024**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:25	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:25	1
Cadmium	**0.00032**	**J**	0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:25	1
Cobalt	**0.00037**	**J**	0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:25	1
Chromium	**0.0010**	**J**	0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:25	1
Molybdenum	**0.0046**	**J**	0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:25	1
Lead	**0.00052**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:25	1
Selenium	**0.0043**	**J**	0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:25	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:25	1
Lithium	**0.036**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:09	1

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:30	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:30	1
Barium	**0.075**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:30	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:30	1
Cadmium	**0.00026**	**J**	0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:30	1
Cobalt	**0.0010**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:30	1
Chromium	**0.0043**		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:30	1
Molybdenum	**0.017**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:30	1
Lead	**0.00093**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:30	1
Selenium	**0.00090**	**J**	0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:30	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:30	1
Lithium	**0.029**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:13	1

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:34	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:34	1
Barium	**0.012**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:34	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:34	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:34	1
Cobalt	**0.00049**	**J**	0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:34	1
Chromium	**0.0023**		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:34	1
Molybdenum	**0.0011**	**J**	0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:34	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:34	1
Selenium	**0.0010**	**J**	0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:34	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:34	1
Lithium	**0.079**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:18	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:39	1
Arsenic	**0.0035**	**J**	0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:39	1
Barium	**0.070**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:39	1
Beryllium	**0.00040**	**J**	0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:39	1
Cadmium	**0.00032**	**J**	0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:39	1
Cobalt	**0.0071**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:39	1
Chromium	**0.011**		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:39	1
Molybdenum	**0.018**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:39	1
Lead	**0.0048**		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:39	1
Selenium	**0.22**		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:39	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:39	1
Lithium	**0.22**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:31	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:43	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:43	1
Barium	**0.038**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:43	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:43	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:43	1
Cobalt	**0.00046**	**J**	0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:43	1
Chromium	**0.0023**		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:43	1
Molybdenum	**0.0015**	**J**	0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:43	1
Lead	**0.00070**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:43	1
Selenium	**0.015**		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:43	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:43	1
Lithium	**0.061**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:36	1

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:48	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:48	1
Barium	**0.019**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:48	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:48	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:48	1
Cobalt	**0.0013**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:48	1
Chromium	**0.0023**		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:48	1
Molybdenum	ND		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:48	1
Lead	**0.00071**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:48	1
Selenium	**0.0086**		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:48	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:48	1
Lithium	**0.13**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:40	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:52	1
Arsenic	**0.0019**	**J**	0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:52	1
Barium	**0.042**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:52	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:52	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:52	1
Cobalt	**0.0092**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:52	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:52	1
Molybdenum	**0.14**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:52	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:52	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:52	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:52	1
Lithium	**0.024**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:45	1

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 14:57	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 14:57	1
Barium	**0.044**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 14:57	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 14:57	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 14:57	1
Cobalt	**0.0082**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 14:57	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 14:57	1
Molybdenum	**0.22**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 14:57	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 14:57	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 14:57	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 14:57	1
Lithium	**0.034**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:49	1

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 15:01	1
Arsenic	**0.0063**		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 15:01	1
Barium	**0.12**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 15:01	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 15:01	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 15:01	1
Cobalt	**0.020**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 15:01	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 15:01	1
Molybdenum	**0.021**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 15:01	1
Lead	**0.00072**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 15:01	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 15:01	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 15:01	1
Lithium	**0.016**		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:54	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 15:06	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 15:06	1
Barium	**0.041**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 15:06	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 15:06	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 15:06	1
Cobalt	**0.0048**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 15:06	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 15:06	1
Molybdenum	**0.0033**	**J**	0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 15:06	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 15:06	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 15:06	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 15:06	1
Lithium	ND		0.0080	0.0017	mg/L		03/05/18 15:00	03/07/18 00:58	1

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 15:19	1
Arsenic	**0.0073**		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 15:19	1
Barium	**0.12**		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 15:19	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 15:19	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 15:19	1
Cobalt	**0.020**		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 15:19	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 15:19	1
Molybdenum	**0.020**		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 15:19	1
Lead	**0.00077**	**J**	0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 15:19	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 15:19	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 15:19	1
Lithium	**0.015**		0.0080	0.0017	mg/L		03/05/18 15:00	03/06/18 15:19	1

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 15:23	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 15:23	1
Barium	ND		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 15:23	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 15:23	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 15:23	1
Cobalt	ND		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 15:23	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 15:23	1
Molybdenum	ND		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 15:23	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 15:23	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 15:23	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 15:23	1
Lithium	ND		0.0080	0.0017	mg/L		03/05/18 15:00	03/06/18 15:23	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:25	1

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:27	1

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:30	1

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:32	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:34	1

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:36	1

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:38	1

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:45	1

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:47	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:50	1

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:52	1

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:54	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.39	J	0.50	0.060	mg/L			03/21/18 00:57	1
Total Suspended Solids	4.8	H	4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.36	J	0.50	0.060	mg/L			03/21/18 01:15	1
Total Suspended Solids	160		4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.15	J	0.50	0.060	mg/L			03/20/18 23:30	1
Total Suspended Solids	11	H	4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	3.7		1.0	0.12	mg/L			03/20/18 23:47	2
Total Suspended Solids	1100		20	5.5	mg/L			03/01/18 13:38	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.16	J	0.50	0.060	mg/L			03/21/18 00:05	1
Total Suspended Solids	13		4.0	1.1	mg/L			03/01/18 13:38	1

General Chemistry

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.20	J	0.50	0.060	mg/L			03/21/18 00:22	1
Total Suspended Solids	28		4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	2.5		0.50	0.060	mg/L			03/21/18 00:40	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	3.3		0.50	0.060	mg/L			03/21/18 01:32	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.7		0.50	0.060	mg/L			03/21/18 03:17	1
Total Suspended Solids	14		4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.47	J	0.50	0.060	mg/L			03/21/18 03:35	1
Total Suspended Solids	24		4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.7		0.50	0.060	mg/L			03/21/18 03:52	1
Total Suspended Solids	20		4.0	1.1	mg/L			03/01/18 13:38	1

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			03/21/18 04:10	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/01/18 13:38	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.240		0.0905	0.0930	1.00	0.0823	pCi/L	03/05/18 10:31	03/27/18 06:06	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110	03/05/18 10:31	03/27/18 06:06	1

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.275		0.0935	0.0967	1.00	0.0734	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.453		0.112	0.119	1.00	0.0630	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.503		0.128	0.136	1.00	0.0726	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.201		0.0808	0.0828	1.00	0.0776	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.495		0.118	0.126	1.00	0.0770	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.126		0.0681	0.0690	1.00	0.0795	pCi/L	03/05/18 10:31	03/27/18 06:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	03/05/18 10:31	03/27/18 06:07	1

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.200		0.0793	0.0813	1.00	0.0713	pCi/L	03/05/18 10:31	03/27/18 06:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/05/18 10:31	03/27/18 06:08	1

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.309		0.0977	0.102	1.00	0.0810	pCi/L	03/05/18 10:31	03/27/18 06:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/05/18 10:31	03/27/18 06:08	1

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.102		0.0692	0.0698	1.00	0.0952	pCi/L	03/05/18 10:31	03/27/18 06:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	03/05/18 10:31	03/27/18 06:08	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.318**		0.0994	0.103	1.00	0.0861	pCi/L	03/05/18 10:31	03/27/18 06:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*03/05/18 10:31*	*03/27/18 06:08*	*1*

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0217	U	0.0431	0.0431	1.00	0.0786	pCi/L	03/05/18 10:31	03/27/18 06:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*03/05/18 10:31*	*03/27/18 06:08*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.568**		0.238	0.243	1.00	0.335	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:03*	*1*
Y Carrier	*91.6*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:03*	*1*

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.368	U	0.243	0.245	1.00	0.376	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:03*	*1*
Y Carrier	*90.1*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:03*	*1*

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.705**		0.236	0.245	1.00	0.312	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/05/18 11:05	03/16/18 14:03	1
Y Carrier	91.2		40 - 110	03/05/18 11:05	03/16/18 14:03	1

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.825		0.266	0.277	1.00	0.360	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	03/05/18 11:05	03/16/18 14:03	1
Y Carrier	88.6		40 - 110	03/05/18 11:05	03/16/18 14:03	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.740		0.250	0.259	1.00	0.336	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/05/18 11:05	03/16/18 14:03	1
Y Carrier	92.0		40 - 110	03/05/18 11:05	03/16/18 14:03	1

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.30		0.302	0.325	1.00	0.371	pCi/L	03/05/18 11:05	03/16/18 14:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	03/05/18 11:05	03/16/18 14:03	1
Y Carrier	87.9		40 - 110	03/05/18 11:05	03/16/18 14:03	1

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.201	U	0.220	0.221	1.00	0.361	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	03/05/18 11:05	03/16/18 14:04	1
Y Carrier	91.2		40 - 110	03/05/18 11:05	03/16/18 14:04	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.155	U	0.252	0.252	1.00	0.423	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*
Y Carrier	*90.8*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.522**		0.236	0.241	1.00	0.340	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*
Y Carrier	*88.2*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.276	U	0.207	0.208	1.00	0.325	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*
Y Carrier	*91.6*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.458**		0.234	0.238	1.00	0.346	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*
Y Carrier	*86.4*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:04*	*1*

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0527	U	0.216	0.216	1.00	0.392	pCi/L	03/05/18 11:05	03/16/18 14:04	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	03/05/18 11:05	03/16/18 14:04	1
Y Carrier	86.0		40 - 110	03/05/18 11:05	03/16/18 14:04	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-7
Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.808		0.255	0.260	5.00	0.335	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-1
Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.643		0.260	0.263	5.00	0.376	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-3
Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.16		0.261	0.272	5.00	0.312	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-4
Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.33		0.295	0.309	5.00	0.360	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-6
Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.941		0.263	0.272	5.00	0.336	pCi/L		03/28/18 17:05	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-8
Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.80		0.324	0.349	5.00	0.371	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-9
Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.327	U	0.230	0.232	5.00	0.361	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-10
Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.354	U	0.264	0.265	5.00	0.423	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-11
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.831		0.255	0.262	5.00	0.340	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-12
Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.378		0.218	0.219	5.00	0.325	pCi/L		03/28/18 17:05	1

Client Sample ID: MW-11FD
Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.776		0.254	0.259	5.00	0.346	pCi/L		03/28/18 17:05	1

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-8EB
Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0310	U	0.220	0.220	5.00	0.392	pCi/L		03/28/18 17:05	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-317171/1-A
Matrix: Water
Analysis Batch: 317443

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 317171

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		03/05/18 15:00	03/06/18 13:31	1
Arsenic	ND		0.0050	0.00075	mg/L		03/05/18 15:00	03/06/18 13:31	1
Barium	ND		0.0050	0.0022	mg/L		03/05/18 15:00	03/06/18 13:31	1
Beryllium	ND		0.0010	0.00031	mg/L		03/05/18 15:00	03/06/18 13:31	1
Cadmium	ND		0.0010	0.00021	mg/L		03/05/18 15:00	03/06/18 13:31	1
Cobalt	ND		0.0010	0.00019	mg/L		03/05/18 15:00	03/06/18 13:31	1
Chromium	ND		0.0020	0.00098	mg/L		03/05/18 15:00	03/06/18 13:31	1
Molybdenum	ND		0.010	0.0011	mg/L		03/05/18 15:00	03/06/18 13:31	1
Lead	ND		0.0010	0.00045	mg/L		03/05/18 15:00	03/06/18 13:31	1
Selenium	ND		0.0050	0.00089	mg/L		03/05/18 15:00	03/06/18 13:31	1
Thallium	ND		0.0010	0.00020	mg/L		03/05/18 15:00	03/06/18 13:31	1

Lab Sample ID: MB 240-317171/1-A
Matrix: Water
Analysis Batch: 317443

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 317171

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.0080	0.0017	mg/L		03/05/18 15:00	03/06/18 23:37	1

Lab Sample ID: LCS 240-317171/3-A
Matrix: Water
Analysis Batch: 317443

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 317171

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120
Arsenic	1.00	1.03		mg/L		103	80 - 120
Barium	1.00	1.02		mg/L		102	80 - 120
Beryllium	1.00	1.07		mg/L		107	80 - 120
Cadmium	1.00	1.09		mg/L		109	80 - 120
Cobalt	1.00	1.09		mg/L		109	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Molybdenum	0.100	0.108		mg/L		108	80 - 120
Lead	1.00	1.06		mg/L		106	80 - 120
Selenium	1.00	1.02		mg/L		102	80 - 120
Thallium	0.250	0.258		mg/L		103	80 - 120

Lab Sample ID: LCS 240-317171/3-A
Matrix: Water
Analysis Batch: 317443

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 317171

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.100	0.102		mg/L		102	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-407538/1-A
Matrix: Water
Analysis Batch: 407658

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 407538

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/12/18 11:59	03/12/18 17:09	1

Lab Sample ID: LCS 280-407538/2-A
Matrix: Water
Analysis Batch: 407658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 407538

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00504		mg/L		101	84 - 120		

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-408494/13
Matrix: Water
Analysis Batch: 408494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			03/20/18 19:44	1
Fluoride	ND		0.50	0.060	mg/L			03/20/18 19:44	1

Lab Sample ID: LCS 280-408494/11
Matrix: Water
Analysis Batch: 408494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			5.00	4.81		mg/L		96	90 - 110		
Fluoride			5.00	4.81		mg/L		96	90 - 110		

Lab Sample ID: LCSD 280-408494/12
Matrix: Water
Analysis Batch: 408494

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride			5.00	4.76		mg/L		95	90 - 110	1	10
Fluoride			5.00	4.76		mg/L		95	90 - 110	1	10

Lab Sample ID: MRL 280-408494/10
Matrix: Water
Analysis Batch: 408494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			0.200	0.230	J	mg/L		115	50 - 150		
Fluoride			0.200	0.230	J	mg/L		115	50 - 150		

Lab Sample ID: 280-106812-8 MS
Matrix: Water
Analysis Batch: 408494

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	3.3		5.00	8.51		mg/L		104	80 - 120		

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 280-106812-8 MS
Matrix: Water
Analysis Batch: 408494

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	3.3		5.00	8.51		mg/L		104	80 - 120		

Lab Sample ID: 280-106812-8 MSD
Matrix: Water
Analysis Batch: 408494

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	3.3		5.00	8.60		mg/L		105	80 - 120	1	20
Fluoride	3.3		5.00	8.60		mg/L		105	80 - 120	1	20

Lab Sample ID: 280-106812-8 DU
Matrix: Water
Analysis Batch: 408494

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	3.3		3.29		mg/L		1	15
Fluoride	3.3		3.29		mg/L		1	15

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-406573/1
Matrix: Water
Analysis Batch: 406573

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/01/18 13:38	1

Lab Sample ID: LCS 280-406573/2
Matrix: Water
Analysis Batch: 406573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids	100	90.4		mg/L		90	86 - 114		

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-353927/23-A
Matrix: Water
Analysis Batch: 357706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 353927

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0005991	U	0.0417	0.0417	1.00	0.0869	pCi/L	03/05/18 10:31	03/27/18 06:15	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/05/18 10:31*	*03/27/18 06:15*	*1*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-353927/1-A
Matrix: Water
Analysis Batch: 357705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 353927

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	11.48		1.18	1.00	0.0816	pCi/L	97	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.1*		*40 - 110*

Lab Sample ID: LCSD 160-353927/2-A
Matrix: Water
Analysis Batch: 357705

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 353927

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.95		1.12	1.00	0.0617	pCi/L	93	68 - 137	0.23	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-353931/23-A
Matrix: Water
Analysis Batch: 356028

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 353931

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2391	U	0.187	0.188	1.00	0.295	pCi/L	03/05/18 11:05	03/16/18 14:02	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:02*	*1*
Y Carrier	*90.1*		*40 - 110*	*03/05/18 11:05*	*03/16/18 14:02*	*1*

Lab Sample ID: LCS 160-353931/1-A
Matrix: Water
Analysis Batch: 356028

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 353931

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.48	9.250		1.06	1.00	0.352	pCi/L	109	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.1*		*40 - 110*
Y Carrier	*89.7*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-353931/2-A
Matrix: Water
Analysis Batch: 356028

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 353931

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.48	7.998		0.925	1.00	0.299	pCi/L	94	56 - 140	0.63	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*91.2*		*40 - 110*

Metals

Prep Batch: 317171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total Recoverable	Water	3005A	
280-106812-2	MW-1	Total Recoverable	Water	3005A	
280-106812-3	MW-3	Total Recoverable	Water	3005A	
280-106812-4	MW-4	Total Recoverable	Water	3005A	
280-106812-5	MW-6	Total Recoverable	Water	3005A	
280-106812-6	MW-8	Total Recoverable	Water	3005A	
280-106812-7	MW-9	Total Recoverable	Water	3005A	
280-106812-8	MW-10	Total Recoverable	Water	3005A	
280-106812-9	MW-11	Total Recoverable	Water	3005A	
280-106812-10	MW-12	Total Recoverable	Water	3005A	
280-106812-11	MW-11FD	Total Recoverable	Water	3005A	
280-106812-12	MW-8EB	Total Recoverable	Water	3005A	
MB 240-317171/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-317171/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 317443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total Recoverable	Water	6020A	317171
280-106812-1	MW-7	Total Recoverable	Water	6020A	317171
280-106812-2	MW-1	Total Recoverable	Water	6020A	317171
280-106812-2	MW-1	Total Recoverable	Water	6020A	317171
280-106812-3	MW-3	Total Recoverable	Water	6020A	317171
280-106812-3	MW-3	Total Recoverable	Water	6020A	317171
280-106812-4	MW-4	Total Recoverable	Water	6020A	317171
280-106812-4	MW-4	Total Recoverable	Water	6020A	317171
280-106812-5	MW-6	Total Recoverable	Water	6020A	317171
280-106812-5	MW-6	Total Recoverable	Water	6020A	317171
280-106812-6	MW-8	Total Recoverable	Water	6020A	317171
280-106812-6	MW-8	Total Recoverable	Water	6020A	317171
280-106812-7	MW-9	Total Recoverable	Water	6020A	317171
280-106812-7	MW-9	Total Recoverable	Water	6020A	317171
280-106812-8	MW-10	Total Recoverable	Water	6020A	317171
280-106812-8	MW-10	Total Recoverable	Water	6020A	317171
280-106812-9	MW-11	Total Recoverable	Water	6020A	317171
280-106812-9	MW-11	Total Recoverable	Water	6020A	317171
280-106812-10	MW-12	Total Recoverable	Water	6020A	317171
280-106812-10	MW-12	Total Recoverable	Water	6020A	317171
280-106812-11	MW-11FD	Total Recoverable	Water	6020A	317171
280-106812-12	MW-8EB	Total Recoverable	Water	6020A	317171
MB 240-317171/1-A	Method Blank	Total Recoverable	Water	6020A	317171
MB 240-317171/1-A	Method Blank	Total Recoverable	Water	6020A	317171
LCS 240-317171/3-A	Lab Control Sample	Total Recoverable	Water	6020A	317171
LCS 240-317171/3-A	Lab Control Sample	Total Recoverable	Water	6020A	317171

Prep Batch: 407538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	7470A	
280-106812-2	MW-1	Total/NA	Water	7470A	
280-106812-3	MW-3	Total/NA	Water	7470A	
280-106812-4	MW-4	Total/NA	Water	7470A	
280-106812-5	MW-6	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 407538 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-6	MW-8	Total/NA	Water	7470A	
280-106812-7	MW-9	Total/NA	Water	7470A	
280-106812-8	MW-10	Total/NA	Water	7470A	
280-106812-9	MW-11	Total/NA	Water	7470A	
280-106812-10	MW-12	Total/NA	Water	7470A	
280-106812-11	MW-11FD	Total/NA	Water	7470A	
280-106812-12	MW-8EB	Total/NA	Water	7470A	
MB 280-407538/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-407538/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 407658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	7470A	407538
280-106812-2	MW-1	Total/NA	Water	7470A	407538
280-106812-3	MW-3	Total/NA	Water	7470A	407538
280-106812-4	MW-4	Total/NA	Water	7470A	407538
280-106812-5	MW-6	Total/NA	Water	7470A	407538
280-106812-6	MW-8	Total/NA	Water	7470A	407538
280-106812-7	MW-9	Total/NA	Water	7470A	407538
280-106812-8	MW-10	Total/NA	Water	7470A	407538
280-106812-9	MW-11	Total/NA	Water	7470A	407538
280-106812-10	MW-12	Total/NA	Water	7470A	407538
280-106812-11	MW-11FD	Total/NA	Water	7470A	407538
280-106812-12	MW-8EB	Total/NA	Water	7470A	407538
MB 280-407538/1-A	Method Blank	Total/NA	Water	7470A	407538
LCS 280-407538/2-A	Lab Control Sample	Total/NA	Water	7470A	407538

General Chemistry

Analysis Batch: 406573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	SM 2540D	
280-106812-2	MW-1	Total/NA	Water	SM 2540D	
280-106812-3	MW-3	Total/NA	Water	SM 2540D	
280-106812-4	MW-4	Total/NA	Water	SM 2540D	
280-106812-5	MW-6	Total/NA	Water	SM 2540D	
280-106812-6	MW-8	Total/NA	Water	SM 2540D	
280-106812-7	MW-9	Total/NA	Water	SM 2540D	
280-106812-8	MW-10	Total/NA	Water	SM 2540D	
280-106812-9	MW-11	Total/NA	Water	SM 2540D	
280-106812-10	MW-12	Total/NA	Water	SM 2540D	
280-106812-11	MW-11FD	Total/NA	Water	SM 2540D	
280-106812-12	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-406573/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-406573/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 408494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	9056A	
280-106812-2	MW-1	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 408494 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-3	MW-3	Total/NA	Water	9056A	
280-106812-4	MW-4	Total/NA	Water	9056A	
280-106812-5	MW-6	Total/NA	Water	9056A	
280-106812-6	MW-8	Total/NA	Water	9056A	
280-106812-7	MW-9	Total/NA	Water	9056A	
280-106812-8	MW-10	Total/NA	Water	9056A	
280-106812-9	MW-11	Total/NA	Water	9056A	
280-106812-10	MW-12	Total/NA	Water	9056A	
280-106812-11	MW-11FD	Total/NA	Water	9056A	
280-106812-12	MW-8EB	Total/NA	Water	9056A	
MB 280-408494/13	Method Blank	Total/NA	Water	9056A	
LCS 280-408494/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-408494/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-408494/10	Lab Control Sample	Total/NA	Water	9056A	
280-106812-8 MS	MW-10	Total/NA	Water	9056A	
280-106812-8 MSD	MW-10	Total/NA	Water	9056A	
280-106812-8 DU	MW-10	Total/NA	Water	9056A	

Rad

Prep Batch: 353927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	PrecSep-21	
280-106812-2	MW-1	Total/NA	Water	PrecSep-21	
280-106812-3	MW-3	Total/NA	Water	PrecSep-21	
280-106812-4	MW-4	Total/NA	Water	PrecSep-21	
280-106812-5	MW-6	Total/NA	Water	PrecSep-21	
280-106812-6	MW-8	Total/NA	Water	PrecSep-21	
280-106812-7	MW-9	Total/NA	Water	PrecSep-21	
280-106812-8	MW-10	Total/NA	Water	PrecSep-21	
280-106812-9	MW-11	Total/NA	Water	PrecSep-21	
280-106812-10	MW-12	Total/NA	Water	PrecSep-21	
280-106812-11	MW-11FD	Total/NA	Water	PrecSep-21	
280-106812-12	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-353927/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-353927/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-353927/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 353931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-1	MW-7	Total/NA	Water	PrecSep_0	
280-106812-2	MW-1	Total/NA	Water	PrecSep_0	
280-106812-3	MW-3	Total/NA	Water	PrecSep_0	
280-106812-4	MW-4	Total/NA	Water	PrecSep_0	
280-106812-5	MW-6	Total/NA	Water	PrecSep_0	
280-106812-6	MW-8	Total/NA	Water	PrecSep_0	
280-106812-7	MW-9	Total/NA	Water	PrecSep_0	
280-106812-8	MW-10	Total/NA	Water	PrecSep_0	
280-106812-9	MW-11	Total/NA	Water	PrecSep_0	
280-106812-10	MW-12	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 353931 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-106812-11	MW-11FD	Total/NA	Water	PrecSep_0	
280-106812-12	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-353931/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-353931/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-353931/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-7

Date Collected: 02/21/18 12:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:25	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:09	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:25	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 00:57	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:06	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-1

Date Collected: 02/27/18 09:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:30	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:13	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:27	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 01:15	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.69 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.69 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-3

Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:34	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:18	DSH	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-3

Date Collected: 02/21/18 15:25
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:30	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/20/18 23:30	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.56 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.56 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-4

Date Collected: 02/28/18 09:35
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:39	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:31	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:32	CDH	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	408494	03/20/18 23:47	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.28 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.28 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-6

Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:43	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:36	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:34	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 00:05	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-6

Date Collected: 02/27/18 12:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.66 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.66 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-8

Date Collected: 02/27/18 10:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:48	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:40	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:36	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 00:22	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.19 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.19 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:03	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-9

Date Collected: 02/22/18 13:30
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:52	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:45	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:38	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 00:40	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.73 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.73 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-10

Date Collected: 02/22/18 11:40
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 14:57	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:49	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:45	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 01:32	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.94 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:08	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.94 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-11

Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 15:01	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:54	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:47	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 03:17	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.77 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:08	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.77 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-12

Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 15:06	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/07/18 00:58	DSH	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-12

Date Collected: 02/23/18 09:55
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:50	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 03:35	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.50 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:08	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.50 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-11FD

Date Collected: 02/22/18 15:15
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 15:19	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:52	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 03:52	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:08	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Client Sample ID: MW-8EB

Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	317171	03/05/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			317443	03/06/18 15:23	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	407538	03/12/18 11:59	CDH	TAL DEN
Total/NA	Analysis	7470A		1			407658	03/12/18 17:54	CDH	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	408494	03/21/18 04:10	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	406573	03/01/18 13:38	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.72 mL	1.0 g	353927	03/05/18 10:31	TJT	TAL SL
Total/NA	Analysis	9315		1			357705	03/27/18 06:08	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.72 mL	1.0 g	353931	03/05/18 11:05	TJT	TAL SL
Total/NA	Analysis	9320		1			356028	03/16/18 14:04	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Client Sample ID: MW-8EB

Date Collected: 02/27/18 11:20
Date Received: 02/28/18 11:45

Lab Sample ID: 280-106812-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			358035	03/28/18 17:05	RTM	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Water	Mercury
9056A		Water	Fluoride

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-18 *
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18 *
New York	NELAP	2	10975	03-31-18 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542018-1	07-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-18 *
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Travis Snyder	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 1
Client Contact: Anna Lundin	Phone: 720-838-6065	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 2
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: ~~720-633-2360(Tel)~~ 303-351-2139	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379	
Site: Colorado	SSOW#:	

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Dissolved Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~Unit 6 MW-1~~				Water		N							
MW-7	2/21/18	1255	G	Water	N	N	X	X	X	X	X		
MW-1	2/27/18	0930	G	Water	N	N	X	X	X	X	X		
MW-3	2/21/18	1525	G	Water	N	N	X	X	X	X	X		
MW-4	2/28/18	0935	G	Water	N	N	X	X	X	X	X		
MW-6	2/27/18	1230	G	Water	N	N	X	X	X	X	X		
MW-8	2/27/18	1030	G	Water	N	N	X	X	X	X	X		
MW-9	2/22/18	1330	G	Water	N	N	X	X	X	X	X		
MW-10	2/22/18	1140	G	Water	N	N	X	X	X	X	X		
MW-11	2/22/18	1515	G	Water	N	N	X	X	X	X	X		
MW-12	2/23/18	0955	G	Water	N	N	X	X	X	X	X		

280-106812 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Travis Snyder	2/28/18 1145	HDR		2/28/18 1145	TA-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4, 5, 4, 4, 5, 6, 2.1 BRS to Transfer RP 228

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Travis Snyder	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 1
Client Contact: Anna Lundin	Phone: 720-838-6065	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 2 of 2
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days): Standard			
State, Zip: CO, 80112				
Phone: ~~720-633-2380(Tel)~~ 303-351-2139	PO #: DEN-001			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Dissolved Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC								Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D									
~~Unit 6 MW-1~~ MW-11FD	2/22/18	1515	G	Water	N	N	X	X	X	X	X								5	
~~MW-7~~ MW-8EB	2/27/18	1120	G	Water	N	N	X	X	X	X	X								5	
~~MW-1~~				Water		N														
~~MW-3~~				Water		N														
~~MW-4~~				Water		N														
~~MW-6~~				Water		N														
~~MW-9~~				Water		N														
~~MW-5~~				Water		N														
~~MW-10~~				Water		N														
~~MW-11~~				Water		N														
~~MW-12~~				Water		N														

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Travis Snyder	2/28/18 1145	HDR	[illegible]	2/28/18 1145	TA-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

3/28/2018

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-429027.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-106812-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/29/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-106812-1)	2/21/18	12:55 Mountain		Water			X	X	X	2	
MW-1 (280-106812-2)	2/27/18	09:30 Mountain		Water			X	X	X	2	
MW-3 (280-106812-3)	2/21/18	15:25 Mountain		Water			X	X	X	2	
MW-4 (280-106812-4)	2/28/18	09:35 Mountain		Water			X	X	X	2	
MW-6 (280-106812-5)	2/27/18	12:30 Mountain		Water			X	X	X	2	
MW-8 (280-106812-6)	2/27/18	10:30 Mountain		Water			X	X	X	2	
MW-9 (280-106812-7)	2/22/18	13:30 Mountain		Water			X	X	X	2	
MW-10 (280-106812-8)	2/22/18	11:40 Mountain		Water			X	X	X	2	
MW-11 (280-106812-9)	2/22/18	15:15 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	3/1/18 1515		Kristen Taylor	3.2.18 0900	TASL
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-429027.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-106812-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/29/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
Preservation Code:											
MW-12 (280-106812-10)	2/23/18	09:55 Mountain		Water			X	X	X	2	
MW-11FD (280-106812-11)	2/22/18	15:15 Mountain		Water			X	X	X	2	
MW-8EB (280-106812-12)	2/27/18	11:20 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

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Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	3/1/18 1515		[signature]	3.2.18 0900	TASTL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-429026.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-106812-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 3/26/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

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Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7 (280-106812-1)	2/21/18	12:55 Mountain		Water			X	1	Use Collision Cell
MW-1 (280-106812-2)	2/27/18	09:30 Mountain		Water			X	1	Use Collision Cell
MW-3 (280-106812-3)	2/21/18	15:25 Mountain		Water			X	1	Use Collision Cell
MW-4 (280-106812-4)	2/28/18	09:35 Mountain		Water			X	1	Use Collision Cell
MW-6 (280-106812-5)	2/27/18	12:30 Mountain		Water			X	1	Use Collision Cell
MW-8 (280-106812-6)	2/27/18	10:30 Mountain		Water			X	1	Use Collision Cell
MW-9 (280-106812-7)	2/22/18	13:30 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-106812-8)	2/22/18	11:40 Mountain		Water			X	1	Use Collision Cell
MW-11 (280-106812-9)	2/22/18	15:15 Mountain		Water			X	1	Use Collision Cell

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Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company	Received by:	Date/Time	Company
Relinquished by:	2/11/18 1525			2/12/18 1015	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-429026.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-106812-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 3/26/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-12 (280-106812-10)	2/23/18	09:55 Mountain		Water			X	1	Use Collision Cell
MW-11FD (280-106812-11)	2/22/18	15:15 Mountain		Water			X	1	Use Collision Cell
MW-8EB (280-106812-12)	2/27/18	11:20 Mountain		Water			X	1	Use Collision Cell

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Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by:	2/11/18 1525		Received by:	3/2/18 1015	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: Heather Myers

Cooler Received on 3/2/18 Opened on 3/2/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box ~~Other~~ MCF

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water (None)

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN# IR-8 (CF **-0.3** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

IR GUN #36 (CF **+0.3**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

~~IR GUN # 627 (CF **-1.3**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC732776**
13. Were VOAs on the COC?	(Yes)	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	(No)
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

17. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative Canton Facility			Login # :_____	
Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
TA NO H	8	10.6	10.3	ICE
↓	↓	3.0	2.7	↓

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-106812-1

Login Number: 106812
List Number: 1
Creator: Blogin, Nick C

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-106812-1

Login Number: 106812
List Number: 3
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 03/02/18 03:09 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8,20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-106812-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-106812-1	MW-7	93.8
280-106812-2	MW-1	93.2
280-106812-3	MW-3	100
280-106812-4	MW-4	104
280-106812-5	MW-6	100
280-106812-6	MW-8	104
280-106812-7	MW-9	102
280-106812-8	MW-10	101
280-106812-9	MW-11	101
280-106812-10	MW-12	102
280-106812-11	MW-11FD	101
280-106812-12	MW-8EB	99.7
LCS 160-353927/1-A	Lab Control Sample	94.1
LCSD 160-353927/2-A	Lab Control Sample Dup	102
MB 160-353927/23-A	Method Blank	109

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-106812-1	MW-7	93.8	91.6
280-106812-2	MW-1	93.2	90.1
280-106812-3	MW-3	100	91.2
280-106812-4	MW-4	104	88.6
280-106812-5	MW-6	100	92.0
280-106812-6	MW-8	104	87.9
280-106812-7	MW-9	102	91.2
280-106812-8	MW-10	101	90.8
280-106812-9	MW-11	101	88.2
280-106812-10	MW-12	102	91.6
280-106812-11	MW-11FD	101	86.4
280-106812-12	MW-8EB	99.7	86.0
LCS 160-353931/1-A	Lab Control Sample	94.1	89.7
LCSD 160-353931/2-A	Lab Control Sample Dup	102	91.2
MB 160-353931/23-A	Method Blank	109	90.1

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
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Tel: (303)736-0100

TestAmerica Job ID: 280-110117-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont
Revision: 1

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
8/2/2018 4:21:16 PM

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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
H	Sample was prepped or analyzed beyond the specified holding time

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
X	Carrier is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-110117-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-110117-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION 1 CHANGES
The report is revised to include results for Calcium by 6020A.

RECEIPT
The samples were received on 5/24/2018 at 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6º C, 1.4º C, 1.6º C and 2.9º C.

The laboratory received one1L Nitric preserved plastic containers and one 1L unpreserved plastic container an 1 500ml Niric for the following sample, rather than two 1L Nitric preserved plastic containers and two 5 500 mL nitric preserved an 1 250 mL unpreserved plastic containers as received for all other samples: MW-9 (280-110117-008). There is sufficient volume to perform the requested analyses.

TOTAL RECOVERABLE METALS
Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-9 (280-110117-8), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/29/2018 and analyzed on 05/30/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-9 (280-110117-8), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/29/2018 and analyzed on 06/01/2018 and 08/02/2018.

Sample MW-3 (280-110117-2)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-9 (280-110117-8), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 05/25/2018,

Job ID: 280-110117-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

05/29/2018, 05/30/2018 and 06/11/2018.

Reanalysis of the following samples were performed outside of the analytical holding time because initial analysis produced residues in excess of 200 mg: MW-4 (280-110117-3), MW-8 (280-110117-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-9 (280-110117-8), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 06/04/2018 and 06/22/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-9 (280-110117-8), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 06/07/2018, 06/08/2018 and 06/13/2018.

Fluoride exceeded the RPD limit for the duplicate of sample 280-110084-1. Sample non-homogeneity is suspected.

Samples MW-1 (280-110117-1)[5X], MW-3 (280-110117-2)[20X], MW-3 (280-110117-2)[5X], MW-4 (280-110117-3)[10X], MW-4 (280-110117-3)[50X], MW-6 (280-110117-4)[10X], MW-6 (280-110117-4)[5X], MW-8 (280-110117-6)[5X], MW-8 (280-110117-6)[50X] and MW-9 (280-110117-8)[5X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/30/2018 and analyzed on 06/21/2018.

Insufficient sample volume was available to perform a sample duplicate (DU) associated with batch 160-368083.

Sample aliquot was reduced due to potential matrix interference: MW-1 (280-110117-1), MW-4 (280-110117-3), MW-6 (280-110117-4).

The barium carrier recovery is outside the upper control limit for the following sample: MW-4 (280-110117-3). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference. The pellet was noted as larger during the out of ingrowth process.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/30/2018 and 06/25/2018 and analyzed on 06/20/2018 and 07/02/2018.

Radium-228 was detected in method blank MB 160-368088/23-A at a level exceeding the reporting limit. The associated samples are non-detect for the contaminant; therefore, re-analysis is not required. Refer to the QC report for details.

The barium carrier recovery is outside the upper control limit for the following sample: MW-4 (280-110117-3). The QC samples associated

Job ID: 280-110117-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

with the batch have acceptable carrier recovery indicating the presence of matrix interference. The pellet was noted as larger during the out of ingrowth process.

Insufficient sample volume was available to perform a sample duplicate (DU) associated with batches 160-368088 and 160-372384.

Sample aliquot was reduced due to potential matrix interference: MW-1 (280-110117-1), MW-4 (280-110117-3), MW-6 (280-110117-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-1 (280-110117-1), MW-3 (280-110117-2), MW-4 (280-110117-3), MW-6 (280-110117-4), MW-7 (280-110117-5), MW-8 (280-110117-6), MW-7D (280-110117-7), MW-11 (280-110117-9), MW-12 (280-110117-10) and MW-9EB (280-110117-11) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 07/02/2018 and 07/03/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-1 — Lab Sample ID: 280-110117-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.37		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00082	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0029	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.19		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00066	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00032	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0054		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.030		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.013		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0086		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0017	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.041		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	100		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	65		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.48	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	320		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	960		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 280-110117-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.4		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.012		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00031	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Selenium	0.0020	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.099		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	550		5.0	2.9	mg/L	5		6020A	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	48		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	2300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3900		20	9.4	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-4 — Lab Sample ID: 280-110117-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.2		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00068	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0019	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.031		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00063	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0040		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0047		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.016		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0020		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.25		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.22		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	420		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	510		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	4.1	J	5.0	0.60	mg/L	10		9056A	Total/NA
Sulfate	5800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	9900	H	100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-6 — Lab Sample ID: 280-110117-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.41		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.049		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00069	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00095	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0063		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0074	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0019		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.080		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-6 (Continued) — Lab Sample ID: 280-110117-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	500		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	1000		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3500		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-110117-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.22		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.022		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00029	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00037	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0012	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0055		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.039		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	54		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	54		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.51		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	85		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	570		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-110117-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.87		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.028		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00028	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0012		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0099		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0025	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0016		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0088		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.13		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	470		1.0	0.58	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-110117-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	160		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	2700		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4300	H	40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7D — Lab Sample ID: 280-110117-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.21		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.020		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00035	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0043	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	50		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	56		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.49	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	97		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	550		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-110117-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	9.3		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.0014	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.023		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	1.1		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0031		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.0012		0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.040		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.31		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.15		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.049		0.0010	0.00045	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9 (Continued) — Lab Sample ID: 280-110117-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0047	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00084	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.10		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	300		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	65		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	3.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	660		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-11 — Lab Sample ID: 280-110117-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3.7		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0022	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.071		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0014		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.020		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.00098	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Calcium	200		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	35		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.75		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	12		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	900		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-12 — Lab Sample ID: 280-110117-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0061		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.11		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0088		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0011	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-12 (Continued) — Lab Sample ID: 280-110117-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.0020	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	140		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	33		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.74		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	8.6		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	850		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-9EB — Lab Sample ID: 280-110117-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-110117-1	MW-1	Water	05/23/18 14:10	05/24/18 08:00
280-110117-2	MW-3	Water	05/23/18 12:02	05/24/18 08:00
280-110117-3	MW-4	Water	05/23/18 12:40	05/24/18 08:00
280-110117-4	MW-6	Water	05/23/18 13:20	05/24/18 08:00
280-110117-5	MW-7	Water	05/22/18 09:15	05/24/18 08:00
280-110117-6	MW-8	Water	05/23/18 08:35	05/24/18 08:00
280-110117-7	MW-7D	Water	05/22/18 09:30	05/24/18 08:00
280-110117-8	MW-9	Water	05/22/18 13:30	05/24/18 08:00
280-110117-9	MW-11	Water	05/22/18 12:05	05/24/18 08:00
280-110117-10	MW-12	Water	05/22/18 11:10	05/24/18 08:00
280-110117-11	MW-9EB	Water	05/21/18 16:00	05/24/18 08:00

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.37		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 21:37	1

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.4		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 21:41	1

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.2		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 21:46	1

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.41		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 21:51	1

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.22		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 21:55	1

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.87		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:00	1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.21		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:04	1

Client Sample ID: MW-9
Date Collected: 05/22/18 13:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	9.3		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:09	1

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	3.7		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:21	1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**3.1**		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:26	1

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 22:30	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00082**	**J**	0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:29	1
Arsenic	**0.0029**	**J**	0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:29	1
Barium	**0.19**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:29	1
Beryllium	**0.00066**	**J**	0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:29	1
Cadmium	**0.00032**	**J**	0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:29	1
Cobalt	**0.0054**		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:29	1
Chromium	**0.030**		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:29	1
Molybdenum	**0.013**		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:29	1
Lead	**0.0086**		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:29	1
Selenium	**0.0017**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:29	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:29	1
Lithium	**0.041**		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:29	1
Calcium	**100**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 13:29	1

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:33	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:33	1
Barium	**0.012**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:33	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:33	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:33	1
Cobalt	**0.00031**	**J**	0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:33	1
Chromium	ND		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:33	1
Molybdenum	ND		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:33	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:33	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:33	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:33	1
Lithium	**0.099**		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:33	1
Calcium	**550**		5.0	2.9	mg/L		05/29/18 14:00	08/02/18 12:05	5

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00068	J	0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:38	1
Arsenic	0.0019	J	0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:38	1
Barium	0.031		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:38	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:38	1
Cadmium	0.00063	J	0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:38	1
Cobalt	0.0040		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:38	1
Chromium	0.0047		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:38	1
Molybdenum	0.016		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:38	1
Lead	0.0020		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:38	1
Selenium	0.25		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:38	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:38	1
Lithium	0.22		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:38	1
Calcium	420		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 13:38	1

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:42	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:42	1
Barium	0.049		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:42	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:42	1
Cadmium	0.00069	J	0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:42	1
Cobalt	0.00095	J	0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:42	1
Chromium	0.0063		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:42	1
Molybdenum	0.0074	J	0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:42	1
Lead	0.0019		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:42	1
Selenium	0.014		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:42	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:42	1
Lithium	0.080		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:42	1
Calcium	370		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 13:42	1

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:47	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:47	1
Barium	0.022		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:47	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:47	1
Cadmium	0.00029	J	0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:47	1
Cobalt	0.00037	J	0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:47	1
Chromium	0.0012	J	0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:47	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:47	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:47	1
Selenium	0.0055		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:47	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:47	1
Lithium	0.039		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:47	1
Calcium	54		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 13:47	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 13:51	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 13:51	1
Barium	**0.028**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 13:51	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 13:51	1
Cadmium	**0.00028**	**J**	0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 13:51	1
Cobalt	**0.0012**		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 13:51	1
Chromium	**0.0099**		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 13:51	1
Molybdenum	**0.0025**	**J**	0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 13:51	1
Lead	**0.0016**		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 13:51	1
Selenium	**0.0088**		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 13:51	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 13:51	1
Lithium	**0.13**		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 13:51	1
Calcium	**470**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 13:51	1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 14:04	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 14:04	1
Barium	**0.020**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 14:04	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 14:04	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 14:04	1
Cobalt	**0.00035**	**J**	0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 14:04	1
Chromium	**0.0013**	**J**	0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 14:04	1
Molybdenum	**0.0031**	**J**	0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 14:04	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 14:04	1
Selenium	**0.0043**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 14:04	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 14:04	1
Lithium	**0.035**		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 14:04	1
Calcium	**50**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 14:04	1

Client Sample ID: MW-9
Date Collected: 05/22/18 13:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0014**	**J**	0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 14:09	1
Arsenic	**0.023**		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 14:09	1
Barium	**1.1**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 14:09	1
Beryllium	**0.0031**		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 14:09	1
Cadmium	**0.0012**		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 14:09	1
Cobalt	**0.040**		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 14:09	1
Chromium	**0.31**		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 14:09	1
Molybdenum	**0.15**		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 14:09	1
Lead	**0.049**		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 14:09	1
Selenium	**0.0047**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 14:09	1
Thallium	**0.00084**	**J**	0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 14:09	1
Lithium	**0.10**		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 14:09	1
Calcium	**300**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 14:09	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 14:13	1
Arsenic	**0.0022**	**J**	0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 14:13	1
Barium	**0.071**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 14:13	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 14:13	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 14:13	1
Cobalt	**0.0014**		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 14:13	1
Chromium	ND		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 14:13	1
Molybdenum	**0.020**		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 14:13	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 14:13	1
Selenium	**0.00098**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 14:13	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 14:13	1
Lithium	ND		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 14:13	1
Calcium	**200**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 14:13	1

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 14:18	1
Arsenic	**0.0061**		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 14:18	1
Barium	**0.11**		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 14:18	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 14:18	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 14:18	1
Cobalt	**0.0088**		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 14:18	1
Chromium	ND		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 14:18	1
Molybdenum	**0.0035**	**J**	0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 14:18	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 14:18	1
Selenium	**0.0011**	**J**	0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 14:18	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 14:18	1
Lithium	**0.0020**	**J**	0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 14:18	1
Calcium	**140**		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 14:18	1

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 14:22	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 14:22	1
Barium	ND		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 14:22	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 14:22	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 14:22	1
Cobalt	ND		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 14:22	1
Chromium	ND		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 14:22	1
Molybdenum	ND		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 14:22	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 14:22	1
Selenium	ND		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 14:22	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 14:22	1
Lithium	ND		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 14:22	1
Calcium	ND		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 14:22	1

General Chemistry

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			06/04/18 20:36	1
Temperature	21.4	HF	1.0	1.0	Degrees C			06/04/18 20:36	1
Chloride	65		3.0	0.25	mg/L			06/08/18 02:53	1
Fluoride	0.48	J	0.50	0.060	mg/L			06/08/18 02:53	1
Sulfate	320		25	1.2	mg/L			06/13/18 16:41	5
Total Dissolved Solids (TDS)	960		20	9.4	mg/L			05/30/18 17:15	1

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/04/18 20:41	1
Temperature	22.0	HF	1.0	1.0	Degrees C			06/04/18 20:41	1
Chloride	48		15	1.3	mg/L			06/07/18 22:08	5
Fluoride	ND		2.5	0.30	mg/L			06/07/18 22:08	5
Sulfate	2300		100	4.6	mg/L			06/08/18 04:40	20
Total Dissolved Solids (TDS)	3900		20	9.4	mg/L			05/30/18 17:15	1

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			06/04/18 20:45	1
Temperature	21.1	HF	1.0	1.0	Degrees C			06/04/18 20:45	1
Chloride	510		30	2.5	mg/L			06/07/18 23:02	10
Fluoride	4.1	J	5.0	0.60	mg/L			06/07/18 23:02	10
Sulfate	5800		250	12	mg/L			06/13/18 17:36	50
Total Dissolved Solids (TDS)	9900	H	100	47	mg/L			06/11/18 14:37	1

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/04/18 20:50	1
Temperature	21.2	HF	1.0	1.0	Degrees C			06/04/18 20:50	1
Chloride	500		15	1.3	mg/L			06/07/18 23:19	5
Fluoride	ND		2.5	0.30	mg/L			06/07/18 23:19	5
Sulfate	1000		50	2.3	mg/L			06/13/18 17:53	10
Total Dissolved Solids (TDS)	3500		20	9.4	mg/L			05/30/18 17:15	1

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			06/04/18 20:54	1
Temperature	21.1	HF	1.0	1.0	Degrees C			06/04/18 20:54	1
Chloride	54		3.0	0.25	mg/L			06/07/18 23:37	1
Fluoride	0.51		0.50	0.060	mg/L			06/07/18 23:37	1
Sulfate	85		5.0	0.23	mg/L			06/07/18 23:37	1
Total Dissolved Solids (TDS)	570		20	9.4	mg/L			05/29/18 15:40	1

General Chemistry

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			06/04/18 20:59	1
Temperature	21.5	HF	1.0	1.0	Degrees C			06/04/18 20:59	1
Chloride	160		15	1.3	mg/L			06/07/18 23:55	5
Fluoride	ND		2.5	0.30	mg/L			06/07/18 23:55	5
Sulfate	2700		250	12	mg/L			06/13/18 18:11	50
Total Dissolved Solids (TDS)	4300	H	40	19	mg/L			06/11/18 14:37	1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/04/18 21:14	1
Temperature	22.2	HF	1.0	1.0	Degrees C			06/04/18 21:14	1
Chloride	56		3.0	0.25	mg/L			06/08/18 00:13	1
Fluoride	0.49	J	0.50	0.060	mg/L			06/08/18 00:13	1
Sulfate	97		5.0	0.23	mg/L			06/08/18 00:13	1
Total Dissolved Solids (TDS)	550		20	9.4	mg/L			05/29/18 15:40	1

Client Sample ID: MW-9
Date Collected: 05/22/18 13:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			06/04/18 21:18	1
Temperature	21.1	HF	1.0	1.0	Degrees C			06/04/18 21:18	1
Chloride	65		3.0	0.25	mg/L			06/08/18 00:31	1
Fluoride	3.2		0.50	0.060	mg/L			06/08/18 00:31	1
Sulfate	660		25	1.2	mg/L			06/08/18 00:48	5
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			05/29/18 15:40	1

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/04/18 21:23	1
Temperature	21.6	HF	1.0	1.0	Degrees C			06/04/18 21:23	1
Chloride	35		3.0	0.25	mg/L			06/08/18 01:06	1
Fluoride	0.75		0.50	0.060	mg/L			06/08/18 01:06	1
Sulfate	12		5.0	0.23	mg/L			06/08/18 01:06	1
Total Dissolved Solids (TDS)	900		20	9.4	mg/L			05/29/18 15:40	1

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			06/04/18 21:28	1
Temperature	21.7	HF	1.0	1.0	Degrees C			06/04/18 21:28	1
Chloride	33		3.0	0.25	mg/L			06/08/18 01:42	1
Fluoride	0.74		0.50	0.060	mg/L			06/08/18 01:42	1
Sulfate	8.6		5.0	0.23	mg/L			06/08/18 01:42	1
Total Dissolved Solids (TDS)	850		20	9.4	mg/L			05/29/18 15:40	1

General Chemistry

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**5.9**	**HF**	0.1	0.1	SU			06/22/18 16:15	1
Temperature	**22.4**	**HF**	1.0	1.0	Degrees C			06/22/18 16:15	1
Chloride	ND		3.0	0.25	mg/L			06/07/18 21:50	1
Fluoride	ND		0.50	0.060	mg/L			06/07/18 21:50	1
Sulfate	ND		5.0	0.23	mg/L			06/07/18 21:50	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/25/18 13:23	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.859**		0.476	0.483	1.00	0.607	pCi/L	05/30/18 14:10	06/21/18 14:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*78.5*		*40 - 110*	*05/30/18 14:10*	*06/21/18 14:45*	*1*

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.696**		0.233	0.241	1.00	0.216	pCi/L	05/30/18 14:10	06/21/18 16:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*05/30/18 14:10*	*06/21/18 16:44*	*1*

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.594**		0.277	0.282	1.00	0.318	pCi/L	05/30/18 14:10	06/21/18 16:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*111*	*X*	*40 - 110*	*05/30/18 14:10*	*06/21/18 16:44*	*1*

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.669**		0.281	0.287	1.00	0.312	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.271**		0.181	0.182	1.00	0.248	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.650**		0.239	0.247	1.00	0.246	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.160	U	0.159	0.160	1.00	0.249	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.144	U	0.154	0.154	1.00	0.245	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143	U	0.142	0.142	1.00	0.220	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0180	U	0.105	0.105	1.00	0.226	pCi/L	05/30/18 14:10	06/21/18 16:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	05/30/18 14:10	06/21/18 16:45	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.959	U	0.650	0.656	1.00	1.00	pCi/L	06/25/18 13:55	07/02/18 14:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	69.9		40 - 110	06/25/18 13:55	07/02/18 14:31	1
Y Carrier	90.1		40 - 110	06/25/18 13:55	07/02/18 14:31	1

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.872**		0.285	0.296	1.00	0.382	pCi/L	05/30/18 14:42	06/20/18 15:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	05/30/18 14:42	06/20/18 15:17	1
Y Carrier	87.1		40 - 110	05/30/18 14:42	06/20/18 15:17	1

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.749**		0.298	0.306	1.00	0.411	pCi/L	05/30/18 14:42	06/20/18 15:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	111	X	40 - 110	05/30/18 14:42	06/20/18 15:17	1
Y Carrier	101		40 - 110	05/30/18 14:42	06/20/18 15:17	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.509		0.268	0.272	1.00	0.393	pCi/L	05/30/18 14:42	06/20/18 15:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:17*	*1*
Y Carrier	*97.9*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:17*	*1*

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.356	U	0.254	0.256	1.00	0.400	pCi/L	05/30/18 14:42	06/20/18 15:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:17*	*1*
Y Carrier	*97.6*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:17*	*1*

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.793		0.249	0.260	1.00	0.329	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*
Y Carrier	*97.9*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.264	U	0.212	0.214	1.00	0.335	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*
Y Carrier	*92.0*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.179	U	0.238	0.238	1.00	0.395	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	05/30/18 14:42	06/20/18 15:18	1
Y Carrier	93.5		40 - 110	05/30/18 14:42	06/20/18 15:18	1

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.184	U	0.211	0.211	1.00	0.346	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	05/30/18 14:42	06/20/18 15:18	1
Y Carrier	93.8		40 - 110	05/30/18 14:42	06/20/18 15:18	1

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.414**		0.214	0.217	1.00	0.317	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	05/30/18 14:42	06/20/18 15:18	1
Y Carrier	97.6		40 - 110	05/30/18 14:42	06/20/18 15:18	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-1
Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.82**		0.806	0.815	5.00	1.00	pCi/L		07/03/18 14:42	1

Client Sample ID: MW-3
Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.57**		0.368	0.382	5.00	0.382	pCi/L		07/02/18 11:21	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-4
Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.34		0.407	0.416	5.00	0.411	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-6
Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.18		0.388	0.395	5.00	0.393	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-7
Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.627		0.312	0.314	5.00	0.400	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-8
Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.44		0.345	0.359	5.00	0.329	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.424		0.265	0.267	5.00	0.335	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.323	U	0.283	0.283	5.00	0.395	pCi/L		07/02/18 11:21	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.327	U	0.254	0.254	5.00	0.346	pCi/L		07/02/18 11:21	1

Client Sample ID: MW-9EB
Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.396**		0.238	0.241	5.00	0.317	pCi/L		07/02/18 11:21	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-328969/1-A
Matrix: Water
Analysis Batch: 329313

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 328969

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		05/29/18 14:00	05/30/18 20:16	1

Lab Sample ID: LCS 240-328969/2-A
Matrix: Water
Analysis Batch: 329313

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 328969

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.05		mg/L		105	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-328969/1-A
Matrix: Water
Analysis Batch: 329885

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 328969

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/29/18 14:00	06/01/18 12:22	1
Arsenic	ND		0.0050	0.00075	mg/L		05/29/18 14:00	06/01/18 12:22	1
Barium	ND		0.0050	0.0022	mg/L		05/29/18 14:00	06/01/18 12:22	1
Beryllium	ND		0.0010	0.00031	mg/L		05/29/18 14:00	06/01/18 12:22	1
Cadmium	ND		0.0010	0.00021	mg/L		05/29/18 14:00	06/01/18 12:22	1
Cobalt	ND		0.0010	0.00019	mg/L		05/29/18 14:00	06/01/18 12:22	1
Chromium	ND		0.0020	0.00098	mg/L		05/29/18 14:00	06/01/18 12:22	1
Molybdenum	ND		0.010	0.0011	mg/L		05/29/18 14:00	06/01/18 12:22	1
Lead	ND		0.0010	0.00045	mg/L		05/29/18 14:00	06/01/18 12:22	1
Selenium	ND		0.0050	0.00089	mg/L		05/29/18 14:00	06/01/18 12:22	1
Thallium	ND		0.0010	0.00020	mg/L		05/29/18 14:00	06/01/18 12:22	1
Lithium	ND		0.0080	0.0017	mg/L		05/29/18 14:00	06/01/18 12:22	1
Calcium	ND		1.0	0.58	mg/L		05/29/18 14:00	06/01/18 12:22	1

Lab Sample ID: LCS 240-328969/3-A
Matrix: Water
Analysis Batch: 329885

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 328969

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0968		mg/L		97	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.04		mg/L		104	80 - 120
Beryllium	1.00	0.919		mg/L		92	80 - 120
Cadmium	1.00	1.08		mg/L		108	80 - 120
Cobalt	1.00	1.01		mg/L		101	80 - 120
Chromium	1.00	0.990		mg/L		99	80 - 120
Molybdenum	0.100	0.0980		mg/L		98	80 - 120
Lead	1.00	0.974		mg/L		97	80 - 120
Selenium	1.00	0.987		mg/L		99	80 - 120
Thallium	0.250	0.240		mg/L		96	80 - 120
Lithium	0.100	0.0921		mg/L		92	80 - 120
Calcium	10.0	10.5		mg/L		105	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-417386/4
Matrix: Water
Analysis Batch: 417386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-419688/4
Matrix: Water
Analysis Batch: 419688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-417735/6
Matrix: Water
Analysis Batch: 417735

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			06/07/18 12:45	1
Fluoride	ND		0.50	0.060	mg/L			06/07/18 12:45	1
Sulfate	ND		5.0	0.23	mg/L			06/07/18 12:45	1

Lab Sample ID: LCS 280-417735/4
Matrix: Water
Analysis Batch: 417735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.6		mg/L		100	90 - 110
Fluoride	5.00	5.14		mg/L		103	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-417735/5
Matrix: Water
Analysis Batch: 417735

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.5		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.14		mg/L		103	90 - 110	0	10
Sulfate	100	99.8		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-417735/3
Matrix: Water
Analysis Batch: 417735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.50	J	mg/L		100	50 - 150
Fluoride	0.200	0.186	J	mg/L		93	50 - 150
Sulfate	2.50	2.50	J	mg/L		100	50 - 150

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 280-110117-1 MS
Matrix: Water
Analysis Batch: 417735

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	65		25.0	89.6		mg/L		99	80 - 120
Fluoride	0.48	J	5.00	5.39		mg/L		98	80 - 120
Sulfate	320	E	25.0	338	E 4	mg/L		87	80 - 120

Lab Sample ID: 280-110117-1 MSD
Matrix: Water
Analysis Batch: 417735

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	65		25.0	89.8		mg/L		100	80 - 120	0	20
Fluoride	0.48	J	5.00	5.41		mg/L		99	80 - 120	0	20
Sulfate	320	E	25.0	338	E 4	mg/L		88	80 - 120	0	20

Lab Sample ID: 280-110117-1 DU
Matrix: Water
Analysis Batch: 417735

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	65		64.7		mg/L		0.07	15
Fluoride	0.48	J	0.480	J	mg/L		0.09	15
Sulfate	320	E	316	E	mg/L		0.08	15

Lab Sample ID: MB 280-418397/6
Matrix: Water
Analysis Batch: 418397

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			06/13/18 12:57	1
Fluoride	ND		0.50	0.060	mg/L			06/13/18 12:57	1
Sulfate	ND		5.0	0.23	mg/L			06/13/18 12:57	1

Lab Sample ID: LCS 280-418397/4
Matrix: Water
Analysis Batch: 418397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	95.9		mg/L		96	90 - 110
Fluoride	5.00	4.98		mg/L		100	90 - 110
Sulfate	100	97.5		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-418397/5
Matrix: Water
Analysis Batch: 418397

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	96.4		mg/L		96	90 - 110	1	10
Fluoride	5.00	5.01		mg/L		100	90 - 110	1	10
Sulfate	100	97.9		mg/L		98	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-418397/3
Matrix: Water
Analysis Batch: 418397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.34	J	mg/L		93	50 - 150
Fluoride	0.200	0.169	J	mg/L		85	50 - 150
Sulfate	2.50	2.35	J	mg/L		94	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-416363/1
Matrix: Water
Analysis Batch: 416363

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/25/18 13:23	1

Lab Sample ID: LCS 280-416363/2
Matrix: Water
Analysis Batch: 416363

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	499	521		mg/L		104	86 - 110

Lab Sample ID: 280-110117-11 DU
Matrix: Water
Analysis Batch: 416363

Client Sample ID: MW-9EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	ND		ND		mg/L		NC	10

Lab Sample ID: MB 280-416642/1
Matrix: Water
Analysis Batch: 416642

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		20	9.4	mg/L			05/29/18 15:40	1

Lab Sample ID: LCS 280-416642/2
Matrix: Water
Analysis Batch: 416642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	499	514		mg/L		103	86 - 110

Lab Sample ID: 280-110117-7 DU
Matrix: Water
Analysis Batch: 416642

Client Sample ID: MW-7D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	550		542		mg/L		1	10

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 280-416836/1
Matrix: Water
Analysis Batch: 416836

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		20	9.4	mg/L			05/30/18 17:15	1

Lab Sample ID: LCS 280-416836/2
Matrix: Water
Analysis Batch: 416836

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	499	536		mg/L		107	86 - 110

Lab Sample ID: 280-110117-1 DU
Matrix: Water
Analysis Batch: 416836

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	960		982		mg/L		2	10

Lab Sample ID: MB 280-418128/1
Matrix: Water
Analysis Batch: 418128

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			06/11/18 14:37	1

Lab Sample ID: LCS 280-418128/2
Matrix: Water
Analysis Batch: 418128

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	507		mg/L		102	86 - 110

Lab Sample ID: 280-110117-3 DU
Matrix: Water
Analysis Batch: 418128

Client Sample ID: MW-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	9900	H	9930		mg/L		0.5	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-368083/23-A
Matrix: Water
Analysis Batch: 371604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368083

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.05069	U	0.107	0.107	1.00	0.194	pCi/L	05/30/18 14:10	06/21/18 16:48	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*05/30/18 14:10*	*06/21/18 16:48*	*1*

Lab Sample ID: LCS 160-368083/1-A
Matrix: Water
Analysis Batch: 371606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368083

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	11.82		1.37	1.00	0.215	pCi/L	100	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*

Lab Sample ID: LCSD 160-368083/2-A
Matrix: Water
Analysis Batch: 371606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368083

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.90		1.29	1.00	0.226	pCi/L	92	68 - 137	0.34	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*107*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-368088/23-A
Matrix: Water
Analysis Batch: 371315

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368088

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.542		0.339	0.368	1.00	0.418	pCi/L	05/30/18 14:42	06/20/18 15:18	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*
Y Carrier	*91.6*		*40 - 110*	*05/30/18 14:42*	*06/20/18 15:18*	*1*

Lab Sample ID: LCS 160-368088/1-A
Matrix: Water
Analysis Batch: 371316

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368088

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.21	8.322		0.972	1.00	0.345	pCi/L	101	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-368088/2-A
Matrix: Water
Analysis Batch: 371316

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368088

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.21	7.867		0.922	1.00	0.338	pCi/L	96	56 - 140	0.24	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*107*		*40 - 110*
Y Carrier	*93.1*		*40 - 110*

Lab Sample ID: MB 160-372384/11-A
Matrix: Water
Analysis Batch: 373489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 372384

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.08489	U	0.254	0.254	1.00	0.459	pCi/L	06/25/18 13:55	07/02/18 14:31	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*06/25/18 13:55*	*07/02/18 14:31*	*1*
Y Carrier	*90.1*		*40 - 110*	*06/25/18 13:55*	*07/02/18 14:31*	*1*

Lab Sample ID: LCS 160-372384/1-A
Matrix: Water
Analysis Batch: 373489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 372384

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.18	9.650		1.11	1.00	0.395	pCi/L	118	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*98.5*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

Lab Sample ID: LCSD 160-372384/2-A
Matrix: Water
Analysis Batch: 373489

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 372384

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.18	10.20		1.17	1.00	0.378	pCi/L	125	56 - 140	0.24	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.5*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Metals

Prep Batch: 328969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total Recoverable	Water	3005A	
280-110117-2	MW-3	Total Recoverable	Water	3005A	
280-110117-3	MW-4	Total Recoverable	Water	3005A	
280-110117-4	MW-6	Total Recoverable	Water	3005A	
280-110117-5	MW-7	Total Recoverable	Water	3005A	
280-110117-6	MW-8	Total Recoverable	Water	3005A	
280-110117-7	MW-7D	Total Recoverable	Water	3005A	
280-110117-8	MW-9	Total Recoverable	Water	3005A	
280-110117-9	MW-11	Total Recoverable	Water	3005A	
280-110117-10	MW-12	Total Recoverable	Water	3005A	
280-110117-11	MW-9EB	Total Recoverable	Water	3005A	
MB 240-328969/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-328969/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-328969/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 329313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total Recoverable	Water	6010C	328969
280-110117-2	MW-3	Total Recoverable	Water	6010C	328969
280-110117-3	MW-4	Total Recoverable	Water	6010C	328969
280-110117-4	MW-6	Total Recoverable	Water	6010C	328969
280-110117-5	MW-7	Total Recoverable	Water	6010C	328969
280-110117-6	MW-8	Total Recoverable	Water	6010C	328969
280-110117-7	MW-7D	Total Recoverable	Water	6010C	328969
280-110117-8	MW-9	Total Recoverable	Water	6010C	328969
280-110117-9	MW-11	Total Recoverable	Water	6010C	328969
280-110117-10	MW-12	Total Recoverable	Water	6010C	328969
280-110117-11	MW-9EB	Total Recoverable	Water	6010C	328969
MB 240-328969/1-A	Method Blank	Total Recoverable	Water	6010C	328969
LCS 240-328969/2-A	Lab Control Sample	Total Recoverable	Water	6010C	328969

Analysis Batch: 329885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total Recoverable	Water	6020A	328969
280-110117-2	MW-3	Total Recoverable	Water	6020A	328969
280-110117-3	MW-4	Total Recoverable	Water	6020A	328969
280-110117-4	MW-6	Total Recoverable	Water	6020A	328969
280-110117-5	MW-7	Total Recoverable	Water	6020A	328969
280-110117-6	MW-8	Total Recoverable	Water	6020A	328969
280-110117-7	MW-7D	Total Recoverable	Water	6020A	328969
280-110117-8	MW-9	Total Recoverable	Water	6020A	328969
280-110117-9	MW-11	Total Recoverable	Water	6020A	328969
280-110117-10	MW-12	Total Recoverable	Water	6020A	328969
280-110117-11	MW-9EB	Total Recoverable	Water	6020A	328969
MB 240-328969/1-A	Method Blank	Total Recoverable	Water	6020A	328969
LCS 240-328969/3-A	Lab Control Sample	Total Recoverable	Water	6020A	328969

Analysis Batch: 339215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-2	MW-3	Total Recoverable	Water	6020A	328969

General Chemistry

Analysis Batch: 416363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-11	MW-9EB	Total/NA	Water	SM 2540C	
MB 280-416363/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-416363/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-110117-11 DU	MW-9EB	Total/NA	Water	SM 2540C	

Analysis Batch: 416642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-5	MW-7	Total/NA	Water	SM 2540C	
280-110117-7	MW-7D	Total/NA	Water	SM 2540C	
280-110117-8	MW-9	Total/NA	Water	SM 2540C	
280-110117-9	MW-11	Total/NA	Water	SM 2540C	
280-110117-10	MW-12	Total/NA	Water	SM 2540C	
MB 280-416642/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-416642/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-110117-7 DU	MW-7D	Total/NA	Water	SM 2540C	

Analysis Batch: 416836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	SM 2540C	
280-110117-2	MW-3	Total/NA	Water	SM 2540C	
280-110117-4	MW-6	Total/NA	Water	SM 2540C	
MB 280-416836/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-416836/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-110117-1 DU	MW-1	Total/NA	Water	SM 2540C	

Analysis Batch: 417386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	9040B	
280-110117-2	MW-3	Total/NA	Water	9040B	
280-110117-3	MW-4	Total/NA	Water	9040B	
280-110117-4	MW-6	Total/NA	Water	9040B	
280-110117-5	MW-7	Total/NA	Water	9040B	
280-110117-6	MW-8	Total/NA	Water	9040B	
280-110117-7	MW-7D	Total/NA	Water	9040B	
280-110117-8	MW-9	Total/NA	Water	9040B	
280-110117-9	MW-11	Total/NA	Water	9040B	
280-110117-10	MW-12	Total/NA	Water	9040B	
LCS 280-417386/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 417735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	9056A	
280-110117-2	MW-3	Total/NA	Water	9056A	
280-110117-2	MW-3	Total/NA	Water	9056A	
280-110117-3	MW-4	Total/NA	Water	9056A	
280-110117-4	MW-6	Total/NA	Water	9056A	
280-110117-5	MW-7	Total/NA	Water	9056A	
280-110117-6	MW-8	Total/NA	Water	9056A	
280-110117-7	MW-7D	Total/NA	Water	9056A	
280-110117-8	MW-9	Total/NA	Water	9056A	
280-110117-8	MW-9	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 417735 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-9	MW-11	Total/NA	Water	9056A	
280-110117-10	MW-12	Total/NA	Water	9056A	
280-110117-11	MW-9EB	Total/NA	Water	9056A	
MB 280-417735/6	Method Blank	Total/NA	Water	9056A	
LCS 280-417735/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-417735/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-417735/3	Lab Control Sample	Total/NA	Water	9056A	
280-110117-1 MS	MW-1	Total/NA	Water	9056A	
280-110117-1 MSD	MW-1	Total/NA	Water	9056A	
280-110117-1 DU	MW-1	Total/NA	Water	9056A	

Analysis Batch: 418128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-3	MW-4	Total/NA	Water	SM 2540C	
280-110117-6	MW-8	Total/NA	Water	SM 2540C	
MB 280-418128/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-418128/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-110117-3 DU	MW-4	Total/NA	Water	SM 2540C	

Analysis Batch: 418397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	9056A	
280-110117-3	MW-4	Total/NA	Water	9056A	
280-110117-4	MW-6	Total/NA	Water	9056A	
280-110117-6	MW-8	Total/NA	Water	9056A	
MB 280-418397/6	Method Blank	Total/NA	Water	9056A	
LCS 280-418397/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-418397/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-418397/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 419688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-11	MW-9EB	Total/NA	Water	9040B	
LCS 280-419688/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 368083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	PrecSep-21	
280-110117-2	MW-3	Total/NA	Water	PrecSep-21	
280-110117-3	MW-4	Total/NA	Water	PrecSep-21	
280-110117-4	MW-6	Total/NA	Water	PrecSep-21	
280-110117-5	MW-7	Total/NA	Water	PrecSep-21	
280-110117-6	MW-8	Total/NA	Water	PrecSep-21	
280-110117-7	MW-7D	Total/NA	Water	PrecSep-21	
280-110117-9	MW-11	Total/NA	Water	PrecSep-21	
280-110117-10	MW-12	Total/NA	Water	PrecSep-21	
280-110117-11	MW-9EB	Total/NA	Water	PrecSep-21	
MB 160-368083/23-A	Method Blank	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 368083 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-368083/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-368083/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 368088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-2	MW-3	Total/NA	Water	PrecSep_0	
280-110117-3	MW-4	Total/NA	Water	PrecSep_0	
280-110117-4	MW-6	Total/NA	Water	PrecSep_0	
280-110117-5	MW-7	Total/NA	Water	PrecSep_0	
280-110117-6	MW-8	Total/NA	Water	PrecSep_0	
280-110117-7	MW-7D	Total/NA	Water	PrecSep_0	
280-110117-9	MW-11	Total/NA	Water	PrecSep_0	
280-110117-10	MW-12	Total/NA	Water	PrecSep_0	
280-110117-11	MW-9EB	Total/NA	Water	PrecSep_0	
MB 160-368088/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-368088/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-368088/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 372384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110117-1	MW-1	Total/NA	Water	PrecSep_0	
MB 160-372384/11-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-372384/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-372384/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-1

Date Collected: 05/23/18 14:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 21:37	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:29	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:36	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/08/18 02:53	CCJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	418397	06/13/18 16:41	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416836	05/30/18 17:15	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			500.29 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 14:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.21 mL	1.0 g	372384	06/25/18 13:55	JLC	TAL SL
Total/NA	Analysis	9320		1			373489	07/02/18 14:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373852	07/03/18 14:42	RTM	TAL SL

Client Sample ID: MW-3

Date Collected: 05/23/18 12:02
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 21:41	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:33	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		5			339215	08/02/18 12:05	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:41	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417735	06/07/18 22:08	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	417735	06/08/18 04:40	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416836	05/30/18 17:15	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.39 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:44	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.39 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:17	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-4

Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 21:46	RKT	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-4

Date Collected: 05/23/18 12:40
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:38	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:45	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	417735	06/07/18 23:02	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	418397	06/13/18 17:36	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	418128	06/11/18 14:37	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			750.54 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:44	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.54 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:17	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-6

Date Collected: 05/23/18 13:20
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 21:51	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:42	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:50	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417735	06/07/18 23:19	CCJ	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	418397	06/13/18 17:53	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416836	05/30/18 17:15	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			750.67 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.67 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:17	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-7

Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 21:55	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:47	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:54	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/07/18 23:37	CCJ	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-7

Date Collected: 05/22/18 09:15
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416642	05/29/18 15:40	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:17	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-8

Date Collected: 05/23/18 08:35
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:00	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 13:51	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 20:59	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417735	06/07/18 23:55	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	418397	06/13/18 18:11	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	418128	06/11/18 14:37	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.12 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.12 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:18	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-7D

Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:04	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 14:04	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 21:14	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/08/18 00:13	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416642	05/29/18 15:40	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.21 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.21 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:18	KLS	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-7D
Date Collected: 05/22/18 09:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-9
Date Collected: 05/22/18 13:30
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:09	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 14:09	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 21:18	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/08/18 00:31	CCJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417735	06/08/18 00:48	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416642	05/29/18 15:40	SGB	TAL DEN

Client Sample ID: MW-11
Date Collected: 05/22/18 12:05
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:21	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 14:13	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 21:23	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/08/18 01:06	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416642	05/29/18 15:40	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.37 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.37 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:18	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-12
Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:26	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Client Sample ID: MW-12

Date Collected: 05/22/18 11:10
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		1			329885	06/01/18 14:18	DSH	TAL CAN
Total/NA	Analysis	9040B		1			417386	06/04/18 21:28	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/08/18 01:42	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	416642	05/29/18 15:40	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1			371315	06/20/18 15:18	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Client Sample ID: MW-9EB

Date Collected: 05/21/18 16:00
Date Received: 05/24/18 08:00

Lab Sample ID: 280-110117-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			329313	05/30/18 22:30	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	328969	05/29/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			329885	06/01/18 14:22	DSH	TAL CAN
Total/NA	Analysis	9040B		1			419688	06/22/18 16:15	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417735	06/07/18 21:50	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	416363	05/25/18 13:23	SGB	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	368083	05/30/18 14:10	JLC	TAL SL
Total/NA	Analysis	9315		1			371606	06/21/18 16:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	368088	05/30/18 14:42	JLC	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	371315	06/20/18 15:18	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:21	ALS	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18 *
Nevada	State Program	9	OH-000482008A	07-31-18 *
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-18 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18 *
US Fish & Wildlife	Federal		058448	07-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18 *
West Virginia DEP	State Program	3	381	08-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-75430-24916.1
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-001			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Metals: B, Ca, As, Ba, Co, Pb, Li, Mo

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd - Total Dissolved Solids (TDS)	6010C / 6020A - Total Metals - Collision Cell (see list)	9056A_28D - Anions (Chloride, Fluoride, Sulfate)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	9040B - pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	D	N		
~~MW-11P~~				Water									
MW-9	5/22/18	1330	G	Water	N	N	X	X	X	X	X	3	
~~MW-10~~				Water									
MW-11	5/22/18	1205	G	Water	N	N	X	X	X	X	X	6	
MW-12	5/22/18	1110	G	Water	N	N	X	X	X	X	X	6	
MW-9EB	5/21/18	1600	G	Water	N	N	X	X	X	X	X	6	
				Water									

280-110117 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/24/18 0800	HDR		5-24-18 0800	TA-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.9, 1.6, 0.6, 1.4 KD 05-24-18

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-75429-24915.1
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:
City: Englewood	TAT Requested (days):
State, Zip: CO, 80112	
Phone: 734-263-7138(Tel)	PO #: DEN-001
Email: anna.lundin@hdrinc.com	WO #:
Project Name: Xcel Energy GW CCR Monitoring - Valmont (COC #1)	Project #: 28014379
Site: Colorado	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Metals: B, Ca, As, Ba, Be, Cd, Cr Co, Pb, Li, Mo, Se

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C / 6020A - Total Metals - Collision Cell (see list)	9056A_28D - Anions (Chloride, Fluoride, Sulfate)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	2540C_Calcd - TDS	9040B - pH											Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N	N												
MW-1	5/23/18	1410	G	Water	N	N	X	X	X	X	X											6	
MW-3	5/23/18	1202	G	Water	N	N	X	X	X	X	X											6	
MW-4	5/23/18	1240	G	Water	N	N	X	X	X	X	X											6	
MW-6	5/23/18	1320	G	Water	N	N	X	X	X	X	X											6	
MW-7	5/22/18	0915	G	Water	N	N	X	X	X	X	X											6	
MW-8	5/23/18	0835	G	Water	N	N	X	X	X	X	X											6	
MW-7D	5/22/18	0930	G	Water	N	N	X	X	X	X	X											6	
				Water																			

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/24/18 0800	HDR	Alyssa Comer	5.24.18 0800	TA-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-75429-24915.1
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:
City: Englewood	TAT Requested (days):
State, Zip: CO. 80112	
Phone: 734-263-7138(Tel)	PO #: DEN-001
Email: anna.lundin@hdrinc.com	WO #:
Project Name: Xcel Energy GW CCR Monitoring - Valmont (COC #1)	Project #: 28014379
Site: Colorado	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Metals: B, Ca, As, Ba, Be, Cd, Cr Co, Pb, Li, Mo, Se

Special Instructions/Note:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C / 6020A - Total Metals - Collision Cell (see list)	9056A_28D - Anions (Chloride, Fluoride, Sulfate)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	2540C_Calcd - TDS	9040B - pH	Total Number of containers
			Preservation Code:		X	X	D	N	D	N	N	X
MW-1	5/23/18	1410	G	Water	N	N	X	X	X	X	X	6
MW-3	5/23/18	1202	G	Water	N	N	X	X	X	X	X	6
MW-4	5/23/18	1240	G	Water	N	N	X	X	X	X	X	6
MW-6	5/23/18	1320	G	Water	N	N	X	X	X	X	X	6
MW-7	5/22/18	0915	G	Water	N	N	X	X	X	X	X	6
MW-8	5/23/18	0835	G	Water	N	N	X	X	X	X	X	6
MW-7D	5/22/18	0930	G	Water	N	N	X	X	X	X	X	6
				Water								

280-110117 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 5/24/18 0800	Company: HDR	Received by:	Date/Time: 5.24.18 0800	Company: TA-D
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-75430-24916.1
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-001			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Special Instructions/Note: Metals: B, Ca, As, Ba, Co, Pb, Li, Mo

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd - Total Dissolved Solids (TDS)	6010C / 6020A - Total Metals - Collision Cell (see list)	9056A_28D - Anions (Chloride, Fluoride, Sulfate)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	9040B - pH	Total Number of containers
Preservation Code:							N	D	N	D	N	
~~MW-11~~				Water								
MW-9	5/22/18	1330	G	Water	N	N	X	X	X	X	X	3
~~MW-10~~				Water								
MW-11	5/22/18	1205	G	Water	N	N	X	X	X	X	X	6
MW-12	5/22/18	1110	G	Water	N	N	X	X	X	X	X	6
MW-9EB	5/21/18	1600	G	Water	N	N	X	X	X	X	X	6
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 5/24/18 0800	Company: HDR	Received by:	Date/Time: 5.24.18 0800	Company: TA-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 2.9, 1.6, 0.6, 1.4 KD 05-24-18

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-439632.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110117-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/20/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-1 (280-110117-1)	5/23/18	14:10 Mountain		Water			X	X	X	2	
MW-3 (280-110117-2)	5/23/18	12:02 Mountain		Water			X	X	X	2	
MW-4 (280-110117-3)	5/23/18	12:40 Mountain		Water			X	X	X	2	
MW-6 (280-110117-4)	5/23/18	13:20 Mountain		Water			X	X	X	2	
MW-7 (280-110117-5)	5/22/18	09:15 Mountain		Water			X	X	X	2	
MW-8 (280-110117-6)	5/23/18	08:35 Mountain		Water			X	X	X	2	
MW-7D (280-110117-7)	5/22/18	09:30 Mountain		Water			X	X	X	2	
MW-9 (280-110117-8)	5/22/18	13:30 Mountain		Water			X	X	X	1	Limited Volume
MW-11 (280-110117-9)	5/22/18	12:05 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:
Empty Kit Relinquished by:	Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/24/18 16:25			05-25-18 0900	TAS-L
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-439632.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110117-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/20/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-12 (280-110117-10)	5/22/18	11:10 Mountain		Water			X	X	X	2	
MW-9EB (280-110117-11)	5/21/18	16:00 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/24/18 1635			05-25-18 0900	TA-STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

17.0/C17.1

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-439631.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110117-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 6/18/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							560
MW-1 (280-110117-1)	5/23/18	14:10 Mountain		Water			X	X	2	Use Collision Cell
MW-3 (280-110117-2)	5/23/18	12:02 Mountain		Water			X	X	2	Use Collision Cell
MW-4 (280-110117-3)	5/23/18	12:40 Mountain		Water			X	X	2	Use Collision Cell
MW-6 (280-110117-4)	5/23/18	13:20 Mountain		Water			X	X	2	Use Collision Cell
MW-7 (280-110117-5)	5/22/18	09:15 Mountain		Water			X	X	2	Use Collision Cell
MW-8 (280-110117-6)	5/23/18	08:35 Mountain		Water			X	X	2	Use Collision Cell
MW-7D (280-110117-7)	5/22/18	09:30 Mountain		Water			X	X	2	Use Collision Cell
MW-9 (280-110117-8)	5/22/18	13:30 Mountain		Water			X	X	2	Use Collision Cell Limited Volu
MW-11 (280-110117-9)	5/22/18	12:05 Mountain		Water			X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by:	5/24/18 1620		Received by:	5/25/18 1045	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-439631.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110117-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 6/18/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-12 (280-110117-10)	5/22/18	11:10 Mountain		Water			X	X	2	Use Collision Cell
MW-9EB (280-110117-11)	5/21/18	16:00 Mountain		Water			X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by:	5/24/18 1620		Received by:	5/25/18 1015	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Dewes Site Name _____ Cooler unpacked by: SL

Cooler Received on 5/25/18 Opened on 5/25/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water (None)

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. 17.0 °C Corrected Cooler Temp. 17.1 °C

IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

~~IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC740840**
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110117-1

Login Number: 110117
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110117-1

Login Number: 110117
List Number: 3
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 05/26/18 12:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8,0.8,0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110117-1

Login Number: 110117
List Number: 4
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 05/26/18 12:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-110117-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-110117-1	MW-1	78.5
280-110117-2	MW-3	104
280-110117-3	MW-4	111 X
280-110117-4	MW-6	104
280-110117-5	MW-7	102
280-110117-6	MW-8	106
280-110117-7	MW-7D	102
280-110117-9	MW-11	103
280-110117-10	MW-12	102
280-110117-11	MW-9EB	109
LCS 160-368083/1-A	Lab Control Sample	108
LCSD 160-368083/2-A	Lab Control Sample Dup	107
MB 160-368083/23-A	Method Blank	106

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-110117-1	MW-1	69.9	90.1
280-110117-2	MW-3	104	87.1
280-110117-3	MW-4	111 X	101
280-110117-4	MW-6	104	97.9
280-110117-5	MW-7	102	97.6
280-110117-6	MW-8	106	97.9
280-110117-7	MW-7D	102	92.0
280-110117-9	MW-11	103	93.5
280-110117-10	MW-12	102	93.8
280-110117-11	MW-9EB	109	97.6
LCS 160-368088/1-A	Lab Control Sample	108	89.3
LCS 160-372384/1-A	Lab Control Sample	98.5	87.1
LCSD 160-368088/2-A	Lab Control Sample Dup	107	93.1
LCSD 160-372384/2-A	Lab Control Sample Dup	96.5	84.9
MB 160-368088/23-A	Method Blank	106	91.6
MB 160-372384/11-A	Method Blank	101	90.1

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-113101-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont
Revision: 1

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
11/1/2018 7:23:58 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Qualifiers

Metals

Qualifier	Qualifier Description
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.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-113101-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-113101-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Revision 1 - 11/1/2018
Revision 1 was created to remove double results for Metals 6010C and Metals 6020A for sample MW-13 (280-113101-1) and to remove the chains of custody that were not associated with this report.

RECEIPT
The samples were received on 8/10/2018 at 11:53 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 4.1° C.

TOTAL RECOVERABLE METALS
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/15/2018 and analyzed on 08/22/2018.

Boron was detected in method blank MB 240-341037/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/15/2018 and analyzed on 08/20/2018 and 08/22/2018.

Chromium was detected in method blank MB 240-341037/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Sample MW-13 (280-113101-1)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for total

Job ID: 280-113101-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/13/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/12/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-113096-1. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/10/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/19/2018 and 08/21/2018.

Samples MW-13 (280-113101-1)[20X], MW-1 (280-113101-2)[10X] and MW-8 (280-113101-4)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/15/2018 and analyzed on 09/06/2018.

Radium-226 was detected in method blank MB 160-382644/18-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-382644.

The following samples were reduced due to potential matrix interference: MW-13 (280-113101-1), MW-1 (280-113101-2), MW-8 (280-113101-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228
Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/15/2018 and analyzed on 08/20/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-382648.

The following samples were reduced due to potential matrix interference: MW-13 (280-113101-1), MW-1 (280-113101-2), MW-8 (280-113101-4).

The detection goal was not met for the following sample due to the reduced sample volume attributed to the presence of matrix interferences: MW-1 (280-113101-2). Analytical results are reported with the MDC achieved.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 280-113101-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-13 (280-113101-1), MW-1 (280-113101-2), MW-7 (280-113101-3) and MW-8 (280-113101-4) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/11/2018.

Combined Radium 226 + 228 exceeded the RPD limit for the duplicate of sample 400-157681-7. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Client Sample ID: MW-13 — Lab Sample ID: 280-113101-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.4	B	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0036	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.043		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00057	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	540		2.0	1.2	mg/L	2		6020A	Total Recoverable
Cadmium	0.00040	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0032		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0046	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0066	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00054	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.25		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.10		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	71		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.88		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	2300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4200		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-1 — Lab Sample ID: 280-113101-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.45	B	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00098	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.058		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00040	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	91		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00045	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0014		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0064	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.028		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0011		0.0010	0.00045	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Client Sample ID: MW-1 (Continued) — Lab Sample ID: 280-113101-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0015	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.031		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	66		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.46	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	400		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	240		6.7	1.8	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-113101-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.42	B	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.013		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	36		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00057	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0028	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0057		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	55		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.46	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	140		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	610		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-113101-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.92	B	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00083	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.015		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	490		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00025	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0016		0.0010	0.00019	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8 (Continued)

Lab Sample ID: 280-113101-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0034	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Lead	0.00086	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.011		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	180		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.13	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3000		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	520		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	320		10	2.8	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113101-1	MW-13	Water	08/09/18 13:25	08/10/18 11:53
280-113101-2	MW-1	Ground Water	08/09/18 11:10	08/10/18 11:53
280-113101-3	MW-7	Ground Water	08/09/18 10:20	08/10/18 11:53
280-113101-4	MW-8	Ground Water	08/09/18 09:30	08/10/18 11:53

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.4	B	0.10	0.023	mg/L		08/15/18 14:00	08/22/18 01:19	1

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.45	B	0.10	0.023	mg/L		08/15/18 14:00	08/22/18 01:24	1

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.42	B	0.10	0.023	mg/L		08/15/18 14:00	08/22/18 01:33	1

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.92	B	0.10	0.023	mg/L		08/15/18 14:00	08/22/18 01:43	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0036	J	0.0050	0.00075	mg/L		08/15/18 14:00	08/20/18 14:46	1
Barium	0.043		0.0050	0.0022	mg/L		08/15/18 14:00	08/20/18 14:46	1
Beryllium	0.00057	J	0.0010	0.00031	mg/L		08/15/18 14:00	08/20/18 14:46	1
Calcium	540		2.0	1.2	mg/L		08/15/18 14:00	08/22/18 00:22	2
Cadmium	0.00040	J	0.0010	0.00021	mg/L		08/15/18 14:00	08/20/18 14:46	1
Cobalt	0.0032		0.0010	0.00019	mg/L		08/15/18 14:00	08/20/18 14:46	1
Chromium	0.0046	B	0.0020	0.00098	mg/L		08/15/18 14:00	08/20/18 14:46	1
Molybdenum	0.0066	J	0.010	0.0011	mg/L		08/15/18 14:00	08/20/18 14:46	1
Lead	0.00054	J	0.0010	0.00045	mg/L		08/15/18 14:00	08/20/18 14:46	1
Selenium	0.25		0.0050	0.00089	mg/L		08/15/18 14:00	08/20/18 14:46	1
Lithium	0.10		0.0080	0.0017	mg/L		08/15/18 14:00	08/20/18 14:46	1

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00098	J	0.0050	0.00075	mg/L		08/15/18 14:00	08/20/18 14:51	1
Barium	0.058		0.0050	0.0022	mg/L		08/15/18 14:00	08/20/18 14:51	1
Beryllium	0.00040	J	0.0010	0.00031	mg/L		08/15/18 14:00	08/20/18 14:51	1
Calcium	91		1.0	0.58	mg/L		08/15/18 14:00	08/20/18 14:51	1
Cadmium	0.00045	J	0.0010	0.00021	mg/L		08/15/18 14:00	08/20/18 14:51	1
Cobalt	0.0014		0.0010	0.00019	mg/L		08/15/18 14:00	08/20/18 14:51	1
Chromium	0.0064	B	0.0020	0.00098	mg/L		08/15/18 14:00	08/20/18 14:51	1
Molybdenum	0.028		0.010	0.0011	mg/L		08/15/18 14:00	08/20/18 14:51	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**0.0011**		0.0010	0.00045	mg/L		08/15/18 14:00	08/20/18 14:51	1
Selenium	**0.0015**	**J**	0.0050	0.00089	mg/L		08/15/18 14:00	08/20/18 14:51	1
Lithium	**0.031**		0.0080	0.0017	mg/L		08/15/18 14:00	08/20/18 14:51	1

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		08/15/18 14:00	08/20/18 15:09	1
Barium	**0.013**		0.0050	0.0022	mg/L		08/15/18 14:00	08/20/18 15:09	1
Beryllium	ND		0.0010	0.00031	mg/L		08/15/18 14:00	08/20/18 15:09	1
Calcium	**36**		1.0	0.58	mg/L		08/15/18 14:00	08/20/18 15:09	1
Cadmium	ND		0.0010	0.00021	mg/L		08/15/18 14:00	08/20/18 15:09	1
Cobalt	**0.00057**	**J**	0.0010	0.00019	mg/L		08/15/18 14:00	08/20/18 15:09	1
Chromium	**0.0028**	**B**	0.0020	0.00098	mg/L		08/15/18 14:00	08/20/18 15:09	1
Molybdenum	**0.0034**	**J**	0.010	0.0011	mg/L		08/15/18 14:00	08/20/18 15:09	1
Lead	ND		0.0010	0.00045	mg/L		08/15/18 14:00	08/20/18 15:09	1
Selenium	**0.0057**		0.0050	0.00089	mg/L		08/15/18 14:00	08/20/18 15:09	1
Lithium	**0.037**		0.0080	0.0017	mg/L		08/15/18 14:00	08/20/18 15:09	1

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00083**	**J**	0.0050	0.00075	mg/L		08/15/18 14:00	08/20/18 15:18	1
Barium	**0.015**		0.0050	0.0022	mg/L		08/15/18 14:00	08/20/18 15:18	1
Beryllium	ND		0.0010	0.00031	mg/L		08/15/18 14:00	08/20/18 15:18	1
Calcium	**490**		1.0	0.58	mg/L		08/15/18 14:00	08/20/18 15:18	1
Cadmium	**0.00025**	**J**	0.0010	0.00021	mg/L		08/15/18 14:00	08/20/18 15:18	1
Cobalt	**0.0016**		0.0010	0.00019	mg/L		08/15/18 14:00	08/20/18 15:18	1
Chromium	**0.0034**	**B**	0.0020	0.00098	mg/L		08/15/18 14:00	08/20/18 15:18	1
Molybdenum	ND		0.010	0.0011	mg/L		08/15/18 14:00	08/20/18 15:18	1
Lead	**0.00086**	**J**	0.0010	0.00045	mg/L		08/15/18 14:00	08/20/18 15:18	1
Selenium	**0.011**		0.0050	0.00089	mg/L		08/15/18 14:00	08/20/18 15:18	1
Lithium	**0.11**		0.0080	0.0017	mg/L		08/15/18 14:00	08/20/18 15:18	1

General Chemistry

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.2**	**HF**	0.1	0.1	SU			08/10/18 18:03	1
Temperature	**20.0**	**HF**	1.0	1.0	Degrees C			08/10/18 18:03	1
Chloride	**71**		3.0	0.25	mg/L			08/19/18 21:11	1
Fluoride	**0.88**		0.50	0.060	mg/L			08/19/18 21:11	1
Sulfate	**2300**		100	4.6	mg/L			08/21/18 01:18	20
Total Dissolved Solids (TDS)	**4200**		40	19	mg/L			08/13/18 12:28	1
Total Suspended Solids	**13**		4.0	1.1	mg/L			08/12/18 18:05	1

General Chemistry

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			08/10/18 18:07	1
Temperature	19.4	HF	1.0	1.0	Degrees C			08/10/18 18:07	1
Chloride	66		3.0	0.25	mg/L			08/19/18 21:46	1
Fluoride	0.46	J	0.50	0.060	mg/L			08/19/18 21:46	1
Sulfate	400		50	2.3	mg/L			08/19/18 22:04	10
Total Dissolved Solids (TDS)	1000		20	9.4	mg/L			08/13/18 12:28	1
Total Suspended Solids	240		6.7	1.8	mg/L			08/12/18 18:05	1

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			08/10/18 18:10	1
Temperature	18.9	HF	1.0	1.0	Degrees C			08/10/18 18:10	1
Chloride	55		3.0	0.25	mg/L			08/19/18 22:22	1
Fluoride	0.46	J	0.50	0.060	mg/L			08/19/18 22:22	1
Sulfate	140		5.0	0.23	mg/L			08/19/18 22:22	1
Total Dissolved Solids (TDS)	610		10	4.7	mg/L			08/13/18 12:28	1
Total Suspended Solids	6.8		4.0	1.1	mg/L			08/12/18 18:05	1

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.2	HF	0.1	0.1	SU			08/10/18 18:17	1
Temperature	19.2	HF	1.0	1.0	Degrees C			08/10/18 18:17	1
Chloride	180		3.0	0.25	mg/L			08/21/18 01:36	1
Fluoride	0.13	J	0.50	0.060	mg/L			08/21/18 01:36	1
Sulfate	3000		100	4.6	mg/L			08/21/18 01:54	20
Total Dissolved Solids (TDS)	520		40	19	mg/L			08/13/18 12:28	1
Total Suspended Solids	320		10	2.8	mg/L			08/12/18 18:05	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.440		0.128	0.134	1.00	0.101	pCi/L	08/15/18 14:18	09/06/18 05:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*08/15/18 14:18*	*09/06/18 05:52*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.764		0.212	0.223	1.00	0.130	pCi/L	08/15/18 14:18	09/06/18 05:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.0*		*40 - 110*	*08/15/18 14:18*	*09/06/18 05:52*	*1*

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.305		0.0959	0.0997	1.00	0.0841	pCi/L	08/15/18 14:18	09/06/18 05:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*08/15/18 14:18*	*09/06/18 05:52*	*1*

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.759		0.163	0.177	1.00	0.0986	pCi/L	08/15/18 14:18	09/06/18 05:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*08/15/18 14:18*	*09/06/18 05:52*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.551	U	0.414	0.417	1.00	0.650	pCi/L	08/15/18 14:48	08/20/18 19:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*08/15/18 14:48*	*08/20/18 19:31*	*1*
Y Carrier	*83.4*		*40 - 110*	*08/15/18 14:48*	*08/20/18 19:31*	*1*

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.465	U G	0.674	0.675	1.00	1.13	pCi/L	08/15/18 14:48	08/20/18 19:31	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.0		40 - 110	08/15/18 14:48	08/20/18 19:31	1
Y Carrier	83.7		40 - 110	08/15/18 14:48	08/20/18 19:31	1

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.361	U	0.302	0.303	1.00	0.478	pCi/L	08/15/18 14:48	08/20/18 19:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110	08/15/18 14:48	08/20/18 19:31	1
Y Carrier	80.4		40 - 110	08/15/18 14:48	08/20/18 19:31	1

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.504	U	0.438	0.441	1.00	0.703	pCi/L	08/15/18 14:48	08/20/18 19:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	08/15/18 14:48	08/20/18 19:31	1
Y Carrier	85.2		40 - 110	08/15/18 14:48	08/20/18 19:31	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-13
Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.991**		0.433	0.438	5.00	0.650	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-1
Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.23**		0.707	0.711	5.00	1.13	pCi/L		09/11/18 02:43	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-7
Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53
Lab Sample ID: 280-113101-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.665		0.317	0.319	5.00	0.478	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-8
Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53
Lab Sample ID: 280-113101-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.26		0.467	0.475	5.00	0.703	pCi/L		09/11/18 02:43	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341037/1-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341037

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.0278	J	0.10	0.023	mg/L		08/15/18 14:00	08/22/18 00:37	1

Lab Sample ID: LCS 240-341037/2-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341037

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.13		mg/L		113	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341037/1-A
Matrix: Water
Analysis Batch: 341809

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341037

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		08/15/18 14:00	08/20/18 14:15	1
Barium	ND		0.0050	0.0022	mg/L		08/15/18 14:00	08/20/18 14:15	1
Beryllium	ND		0.0010	0.00031	mg/L		08/15/18 14:00	08/20/18 14:15	1
Calcium	ND		1.0	0.58	mg/L		08/15/18 14:00	08/20/18 14:15	1
Cadmium	ND		0.0010	0.00021	mg/L		08/15/18 14:00	08/20/18 14:15	1
Cobalt	ND		0.0010	0.00019	mg/L		08/15/18 14:00	08/20/18 14:15	1
Chromium	0.00188	J	0.0020	0.00098	mg/L		08/15/18 14:00	08/20/18 14:15	1
Molybdenum	ND		0.010	0.0011	mg/L		08/15/18 14:00	08/20/18 14:15	1
Lead	ND		0.0010	0.00045	mg/L		08/15/18 14:00	08/20/18 14:15	1
Selenium	ND		0.0050	0.00089	mg/L		08/15/18 14:00	08/20/18 14:15	1
Lithium	ND		0.0080	0.0017	mg/L		08/15/18 14:00	08/20/18 14:15	1

Lab Sample ID: LCS 240-341037/3-A
Matrix: Water
Analysis Batch: 341809

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341037

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.06		mg/L		106	80 - 120
Barium	1.00	0.999		mg/L		100	80 - 120
Beryllium	1.00	0.861		mg/L		86	80 - 120
Calcium	10.0	10.4		mg/L		104	80 - 120
Cadmium	1.00	1.04		mg/L		104	80 - 120
Cobalt	1.00	1.11		mg/L		111	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Molybdenum	0.100	0.0970		mg/L		97	80 - 120
Lead	1.00	1.07		mg/L		107	80 - 120
Selenium	1.00	1.06		mg/L		106	80 - 120
Lithium	0.100	0.0896		mg/L		90	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-425790/4
Matrix: Water
Analysis Batch: 425790

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-426728/6
Matrix: Water
Analysis Batch: 426728

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/19/18 16:41	1
Fluoride	ND		0.50	0.060	mg/L			08/19/18 16:41	1
Sulfate	ND		5.0	0.23	mg/L			08/19/18 16:41	1

Lab Sample ID: LCS 280-426728/4
Matrix: Water
Analysis Batch: 426728

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	102		mg/L		102	90 - 110
Fluoride	5.00	5.17		mg/L		103	90 - 110
Sulfate	100	105		mg/L		105	90 - 110

Lab Sample ID: LCSD 280-426728/5
Matrix: Water
Analysis Batch: 426728

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	102		mg/L		102	90 - 110	0	10
Fluoride	5.00	5.23		mg/L		105	90 - 110	1	10
Sulfate	100	105		mg/L		105	90 - 110	1	10

Lab Sample ID: MRL 280-426728/3
Matrix: Water
Analysis Batch: 426728

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.68	J	mg/L		107	50 - 150
Fluoride	0.200	0.197	J	mg/L		99	50 - 150
Sulfate	2.50	3.08	J	mg/L		123	50 - 150

Lab Sample ID: MB 280-426814/6
Matrix: Water
Analysis Batch: 426814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/20/18 13:31	1
Fluoride	ND		0.50	0.060	mg/L			08/20/18 13:31	1
Sulfate	ND		5.0	0.23	mg/L			08/20/18 13:31	1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-426814/4
Matrix: Water
Analysis Batch: 426814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	102		mg/L		102	90 - 110
Fluoride	5.00	5.31		mg/L		106	90 - 110
Sulfate	100	106		mg/L		106	90 - 110

Lab Sample ID: LCSD 280-426814/5
Matrix: Water
Analysis Batch: 426814

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	102		mg/L		102	90 - 110	0	10
Fluoride	5.00	5.38		mg/L		108	90 - 110	1	10
Sulfate	100	105		mg/L		105	90 - 110	1	10

Lab Sample ID: MRL 280-426814/3
Matrix: Water
Analysis Batch: 426814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.69	J	mg/L		108	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	3.25	J	mg/L		130	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-425943/1
Matrix: Water
Analysis Batch: 425943

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/13/18 12:28	1

Lab Sample ID: LCS 280-425943/2
Matrix: Water
Analysis Batch: 425943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	502		mg/L		100	86 - 110

Lab Sample ID: LCSD 280-425943/25
Matrix: Water
Analysis Batch: 425943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	500		mg/L		100	86 - 110	0	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-425873/1
Matrix: Water
Analysis Batch: 425873

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/12/18 18:05	1

Lab Sample ID: LCS 280-425873/2
Matrix: Water
Analysis Batch: 425873

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	88.4		mg/L		88	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-382644/18-A
Matrix: Water
Analysis Batch: 387347

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382644

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1242		0.0606	0.0616	1.00	0.0626	pCi/L	08/15/18 14:18	09/06/18 05:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*08/15/18 14:18*	*09/06/18 05:55*	*1*

Lab Sample ID: LCS 160-382644/1-A
Matrix: Water
Analysis Batch: 387348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382644

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.06		1.12	1.00	0.0770	pCi/L	97	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*

Lab Sample ID: LCSD 160-382644/2-A
Matrix: Water
Analysis Batch: 387348

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382644

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.54		1.09	1.00	0.0803	pCi/L	93	68 - 137	0.24	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*86.4*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-382648/18-A
Matrix: Water
Analysis Batch: 384032

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382648

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05239	U	0.295	0.295	1.00	0.516	pCi/L	08/15/18 14:48	08/20/18 19:33	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*08/15/18 14:48*	*08/20/18 19:33*	*1*
Y Carrier	*83.7*		*40 - 110*	*08/15/18 14:48*	*08/20/18 19:33*	*1*

Lab Sample ID: LCS 160-382648/1-A
Matrix: Water
Analysis Batch: 384032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382648

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	13.12		1.52	1.00	0.517	pCi/L	118	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

Lab Sample ID: LCSD 160-382648/2-A
Matrix: Water
Analysis Batch: 384032

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382648

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	11.37		1.38	1.00	0.569	pCi/L	103	56 - 140	0.60	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*86.4*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Metals

Prep Batch: 341037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total Recoverable	Water	3005A	
280-113101-2	MW-1	Total Recoverable	Ground Water	3005A	
280-113101-3	MW-7	Total Recoverable	Ground Water	3005A	
280-113101-4	MW-8	Total Recoverable	Ground Water	3005A	
MB 240-341037/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341037/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341037/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 341809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total Recoverable	Water	6020A	341037
280-113101-2	MW-1	Total Recoverable	Ground Water	6020A	341037
280-113101-3	MW-7	Total Recoverable	Ground Water	6020A	341037
280-113101-4	MW-8	Total Recoverable	Ground Water	6020A	341037
MB 240-341037/1-A	Method Blank	Total Recoverable	Water	6020A	341037
LCS 240-341037/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341037

Analysis Batch: 341961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total Recoverable	Water	6010C	341037
280-113101-2	MW-1	Total Recoverable	Ground Water	6010C	341037
280-113101-3	MW-7	Total Recoverable	Ground Water	6010C	341037
280-113101-4	MW-8	Total Recoverable	Ground Water	6010C	341037
MB 240-341037/1-A	Method Blank	Total Recoverable	Water	6010C	341037
LCS 240-341037/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341037

Analysis Batch: 341985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total Recoverable	Water	6020A	341037

General Chemistry

Analysis Batch: 425790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	9040B	
280-113101-2	MW-1	Total/NA	Ground Water	9040B	
280-113101-3	MW-7	Total/NA	Ground Water	9040B	
280-113101-4	MW-8	Total/NA	Ground Water	9040B	
LCS 280-425790/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 425873

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	SM 2540D	
280-113101-2	MW-1	Total/NA	Ground Water	SM 2540D	
280-113101-3	MW-7	Total/NA	Ground Water	SM 2540D	
280-113101-4	MW-8	Total/NA	Ground Water	SM 2540D	
MB 280-425873/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-425873/2	Lab Control Sample	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 425943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	SM 2540C	
280-113101-2	MW-1	Total/NA	Ground Water	SM 2540C	
280-113101-3	MW-7	Total/NA	Ground Water	SM 2540C	
280-113101-4	MW-8	Total/NA	Ground Water	SM 2540C	
MB 280-425943/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-425943/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-425943/25	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 426728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	9056A	
280-113101-2	MW-1	Total/NA	Ground Water	9056A	
280-113101-2	MW-1	Total/NA	Ground Water	9056A	
280-113101-3	MW-7	Total/NA	Ground Water	9056A	
MB 280-426728/6	Method Blank	Total/NA	Water	9056A	
LCS 280-426728/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-426728/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-426728/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 426814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	9056A	
280-113101-4	MW-8	Total/NA	Ground Water	9056A	
280-113101-4	MW-8	Total/NA	Ground Water	9056A	
MB 280-426814/6	Method Blank	Total/NA	Water	9056A	
LCS 280-426814/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-426814/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-426814/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 382644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	PrecSep-21	
280-113101-2	MW-1	Total/NA	Ground Water	PrecSep-21	
280-113101-3	MW-7	Total/NA	Ground Water	PrecSep-21	
280-113101-4	MW-8	Total/NA	Ground Water	PrecSep-21	
MB 160-382644/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-382644/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-382644/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 382648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113101-1	MW-13	Total/NA	Water	PrecSep_0	
280-113101-2	MW-1	Total/NA	Ground Water	PrecSep_0	
280-113101-3	MW-7	Total/NA	Ground Water	PrecSep_0	
280-113101-4	MW-8	Total/NA	Ground Water	PrecSep_0	
MB 160-382648/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-382648/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-382648/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Client Sample ID: MW-13

Date Collected: 08/09/18 13:25
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/22/18 01:19	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			341809	08/20/18 14:46	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			341985	08/22/18 00:22	DSH	TAL CAN
Total/NA	Analysis	9040B		1			425790	08/10/18 18:03	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426728	08/19/18 21:11	A1D	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	426814	08/21/18 01:18	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	425943	08/13/18 12:28	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425873	08/12/18 18:05	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.02 mL	1.0 g	382644	08/15/18 14:18	JLC	TAL SL
Total/NA	Analysis	9315		1			387348	09/06/18 05:52	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.02 mL	1.0 g	382648	08/15/18 14:48	JLC	TAL SL
Total/NA	Analysis	9320		1			384032	08/20/18 19:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: MW-1

Date Collected: 08/09/18 11:10
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/22/18 01:24	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			341809	08/20/18 14:51	DSH	TAL CAN
Total/NA	Analysis	9040B		1			425790	08/10/18 18:07	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426728	08/19/18 21:46	A1D	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	426728	08/19/18 22:04	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	425943	08/13/18 12:28	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	150 mL	250 mL	425873	08/12/18 18:05	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			499.87 mL	1.0 g	382644	08/15/18 14:18	JLC	TAL SL
Total/NA	Analysis	9315		1			387348	09/06/18 05:52	KLS	TAL SL
Total/NA	Prep	PrecSep_0			499.87 mL	1.0 g	382648	08/15/18 14:48	JLC	TAL SL
Total/NA	Analysis	9320		1			384032	08/20/18 19:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Client Sample ID: MW-7

Date Collected: 08/09/18 10:20
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/22/18 01:33	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			341809	08/20/18 15:09	DSH	TAL CAN
Total/NA	Analysis	9040B		1			425790	08/10/18 18:10	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426728	08/19/18 22:22	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425943	08/13/18 12:28	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425873	08/12/18 18:05	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.17 mL	1.0 g	382644	08/15/18 14:18	JLC	TAL SL
Total/NA	Analysis	9315		1			387348	09/06/18 05:52	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.17 mL	1.0 g	382648	08/15/18 14:48	JLC	TAL SL
Total/NA	Analysis	9320		1			384032	08/20/18 19:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: MW-8

Date Collected: 08/09/18 09:30
Date Received: 08/10/18 11:53

Lab Sample ID: 280-113101-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/22/18 01:43	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341037	08/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			341809	08/20/18 15:18	DSH	TAL CAN
Total/NA	Analysis	9040B		1			425790	08/10/18 18:17	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426814	08/21/18 01:36	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	426814	08/21/18 01:54	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	425943	08/13/18 12:28	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	100 mL	250 mL	425873	08/12/18 18:05	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.28 mL	1.0 g	382644	08/15/18 14:18	JLC	TAL SL
Total/NA	Analysis	9315		1			387348	09/06/18 05:52	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.28 mL	1.0 g	382648	08/15/18 14:48	JLC	TAL SL
Total/NA	Analysis	9320		1			384032	08/20/18 19:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113101-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Ground Water	Temperature
9040B		Water	Temperature
9056A		Ground Water	Chloride
9056A		Ground Water	Fluoride
9056A		Ground Water	Sulfate
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: (507) 250-1774	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Englewood	TAT Requested (days): Standard			A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
State, Zip: CO, 80112	PO #: DEN-001			
Phone: 734-253-7138(Tel)	WO #:			
Email: anna.lundin@hdrinc.com	Project #: 28014379			Other:
Project Name: Xcel Energy GW CCR Monitoring - Valmont (COC #1)	SSOW#:			
Site:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C / 6020A - Total Metals - see list	300.0A_28D - Anions (Fluoride, Sulfate, Chloride)	pH	2540C - TDS	9315, Ra226, 9320, Ra228, Ra226+Ra228, GFPC	TSS	Total Number of Containers	Special Instructions/Note:
			Preservation Code:		X	X	D	N	N	D	D	D	X	
MW-1				Water										B, Ca, Sd, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl
MW-3				Water										
MW-4				Water										
MW-5				Water										
MW-6				Water										
MW-7				Water										
MW-8				Water										
MW-13	8/9/18	1325	G	Water	Y	N	X	X	X	X	X	X	5	
MW-14				Water										
MW-15				Water										
MW-16				Water										

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 8/10/18 1150	Company: HDR	Received by:	Date/Time: 8/10/18 1153	Company: TA-Dn
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: △ Yes △ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: (507) 250-1774	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days): Standard			
State, Zip: CO, 80112				
Phone: 734-263-7136(Tel)	PO #: DEN-001			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont (COC #1)	Project #: 28014379			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Soil, Sediment, Tissue, Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C / 6020A - Total Metals - see list	300/A_28D - Anions (Fluoride, Sulfate, Chloride), pH	2540C - TDS	9315, Ra226, 9320, Ra228, Ra226Ra228_GFPC	TSS	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	N	N	D	N		
MW-1	8/9/18	1110	G	Water	Y	N	X	X	X	X	X	1	B, Ca, Sr, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se
MW-3				Water									
MW-4				Water									
MW-5				Water									
MW-6				Water									
MW-7	8/9/18	1020	G	Water	Y	N	X	X	X	X	X	1	
MW-8	8/9/18	0930	G	Water	Y	N	X	X	X	X	X	1	
MW-13				Water									
MW-14				Water									
MW-15				Water									
MW-16				Water									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time: 8/10/18 1150	Company: HDR	Received by:	Date/Time: 8/10/18 1157	Company: TA-V		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450910.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113101-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/6/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-13 (280-113101-1)	8/9/18	13:25 Mountain		Water			X	X	X	2	
MW-1 (280-113101-2)	8/9/18	11:10 Mountain		Water			X	X	X	2	
MW-7 (280-113101-3)	8/9/18	10:20 Mountain		Water			X	X	X	2	
MW-8 (280-113101-4)	8/9/18	09:30 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Joana Castro	8-13-18 1425	TAL Den		8/14/18 0905	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450911.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113101-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 9/4/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

5/8

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A (MOD) Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-13 (280-113101-1)	8/9/18	13:25 Mountain		Water			X	X	2	, Use Collision Cell
MW-1 (280-113101-2)	8/9/18	11:10 Mountain		Water			X	X	2	, Use Collision Cell
MW-7 (280-113101-3)	8/9/18	10:20 Mountain		Water			X	X	2	, Use Collision Cell
MW-8 (280-113101-4)	8/9/18	09:30 Mountain		Water			X	X	2	, Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Paula Castro	8-13-18 1425	TAL Den		8/14/18 9:45	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113101-1

Login Number: 113101
List Number: 1
Creator: Rhoades, Joseph P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113101-1

Login Number: 113101
List Number: 2
Creator: Carter, Kevin M

List Source: TestAmerica St. Louis
List Creation: 08/14/18 11:10 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113101-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-113101-2	MW-1	85.0
280-113101-3	MW-7	94.7
280-113101-4	MW-8	100

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-113101-1	MW-13	97.1
LCS 160-382644/1-A	Lab Control Sample	92.6
LCSD 160-382644/2-A	Lab Control Sample Dup	86.4
MB 160-382644/18-A	Method Blank	103

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-113101-2	MW-1	85.0	83.7
280-113101-3	MW-7	94.7	80.4
280-113101-4	MW-8	100	85.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-113101-1	MW-13	97.1	83.4
LCS 160-382648/1-A	Lab Control Sample	92.6	83.7
LCSD 160-382648/2-A	Lab Control Sample Dup	86.4	83.7
MB 160-382648/18-A	Method Blank	103	83.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-113243-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
9/26/2018 3:07:56 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Qualifiers

Metals

Qualifier	Qualifier Description
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.
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-113243-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-113243-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 8/16/2018 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.5º C, 0.7º C and 1.5º C.

Receipt Exceptions

Received approximately one 1L Nitric poly bottle for sample ID MW-5. Per conversation with client on 8/16/18, Radium testing is low priority, and Total Metals are to be run on this sample. Total Metals has been logged. Additionally, only a single 1L unpreserved poly bottle received for wet chemistries, as well as the associated Dissolved Metals for this sample. List regarding method priority, per client, has been included in the sample notes, with preference in the following order: TSS > Anions > TDS > pH for the wet chemistries, with additional notation regarding the limited volume of the sample. 100mL of the unpreserved sample was split for the dissolved metals for this sample, and was lab filtered.

TOTAL RECOVERABLE METALS

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/20/2018 and analyzed on 08/21/2018.

The MS/MSD for this analytical batch was performed on the dissolved sample MW-14 (280-113243-2), which is reported under job 280-113243-2. As such, the total recoverable analysis for sample MW-14 (280-113243-2) in this report is not flagged.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/20/2018 and analyzed on 08/24/2018, 08/27/2018 and 08/28/2018.

Chromium was detected in method blank MB 240-341588/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Job ID: 280-113243-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-14 (280-113243-2)[5X], MW-15 (280-113243-3)[2X], MW-16 (280-113243-4)[2X], MW-14D (280-113243-5)[2X] and MW-14D (280-113243-5)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The MS/MSD for this analytical batch was performed on the dissolved sample MW-14 (280-113243-2), which is reported under job 280-113243-2. As such, the total recoverable analysis for sample MW-14 (280-113243-2) in this report is not flagged.

The continuing calibration verification (CCV) associated with batch 240-342797 recovered above the upper control limit for Beryllium. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been qualified and reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/19/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/19/2018.

The sample duplicate (DUP) precision for 2540D analytical batch 280-426735 was outside control limits. Sample non-homogeneity is suspected.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/22/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-5 (280-113243-1), MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/23/2018, 08/24/2018 and 08/31/2018.

Samples MW-5 (280-113243-1)[10X], MW-14 (280-113243-2)[20X], MW-15 (280-113243-3)[20X], MW-14D (280-113243-5)[2X] and MW-14D (280-113243-5)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The sample duplicate (DUP) precision for analytical batch 280-427269 was outside control limits for sulfate, method 9056A_28D, batch 427269. Sample non-homogeneity is suspected.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/21/2018 and analyzed on 09/12/2018.

Radium-226 was detected in method blank MB 160-384214/11-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Sample aliquot MW-15 (280-113243-3) reduced due to potential matrix interference. Sample was yellow, opaque, and contained heavy

Job ID: 280-113243-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

sediment levels.

Sample aliquot MW-16 (280-113243-4) reduced due to potential matrix interference. Sample was gray, opaque, and contained heavy sediment levels.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/21/2018 and analyzed on 08/24/2018.

Sample aliquot MW-15 (280-113243-3) reduced due to potential matrix interference. Sample was yellow, opaque, and contained heavy sediment levels.

Sample aliquot MW-16 (280-113243-4) reduced due to potential matrix interference. Sample was gray, opaque, and contained heavy sediment levels.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-14 (280-113243-2), MW-15 (280-113243-3), MW-16 (280-113243-4) and MW-14D (280-113243-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/18/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-5 — Lab Sample ID: 280-113243-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.2		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00078	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Barium	0.024		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00033	J ^	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	56		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00083	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.010	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0074	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00091	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0037	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.054		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	18		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.37	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	210		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	760		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	49		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-14 — Lab Sample ID: 280-113243-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.3		0.10	0.023	mg/L	1		6010C	Total Recoverable
Cadmium	0.23	J	1.0	0.21	ug/L	1		6020A	Total Recoverable
Lithium	0.14		0.040	0.0083	mg/L	5		6020A	Total Recoverable
Beryllium	0.58	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Barium	29		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	490000		1000	580	ug/L	1		6020A	Total Recoverable
Molybdenum	5.9	J	10	1.1	ug/L	1		6020A	Total Recoverable
Arsenic	12		5.0	0.75	ug/L	1		6020A	Total Recoverable
Lead	0.46	J	1.0	0.45	ug/L	1		6020A	Total Recoverable
Selenium	1600		5.0	0.89	ug/L	1		6020A	Total Recoverable
Chromium	8.1	B	2.0	0.98	ug/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-14 (Continued) — Lab Sample ID: 280-113243-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.98	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.0		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3000		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	5000		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	26		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-15 — Lab Sample ID: 280-113243-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.56		0.10	0.023	mg/L	1		6010C	Total Recoverable
Lithium	0.056		0.016	0.0033	mg/L	2		6020A	Total Recoverable
Beryllium	0.91	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Barium	130		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	190000		1000	580	ug/L	1		6020A	Total Recoverable
Molybdenum	7.1	J	10	1.1	ug/L	1		6020A	Total Recoverable
Arsenic	4.7	J	5.0	0.75	ug/L	1		6020A	Total Recoverable
Lead	6.6		1.0	0.45	ug/L	1		6020A	Total Recoverable
Selenium	170		5.0	0.89	ug/L	1		6020A	Total Recoverable
Chromium	37	B	2.0	0.98	ug/L	1		6020A	Total Recoverable
Cobalt	3.9		1.0	0.19	ug/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	86		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.81		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1000		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	340		6.7	1.8	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-16 — Lab Sample ID: 280-113243-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.60		0.10	0.023	mg/L	1		6010C	Total Recoverable
Cadmium	0.28	J	1.0	0.21	ug/L	1		6020A	Total Recoverable
Lithium	0.055		0.016	0.0033	mg/L	2		6020A	Total Recoverable
Beryllium	0.84	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-16 (Continued) — Lab Sample ID: 280-113243-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	200		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	62000		1000	580	ug/L	1		6020A	Total Recoverable
Molybdenum	38		10	1.1	ug/L	1		6020A	Total Recoverable
Arsenic	5.1		5.0	0.75	ug/L	1		6020A	Total Recoverable
Lead	7.8		1.0	0.45	ug/L	1		6020A	Total Recoverable
Selenium	8.2		5.0	0.89	ug/L	1		6020A	Total Recoverable
Chromium	39	B	2.0	0.98	ug/L	1		6020A	Total Recoverable
Cobalt	4.9		1.0	0.19	ug/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	54		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	170		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	720		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	870		20	5.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-14D — Lab Sample ID: 280-113243-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.2		0.10	0.023	mg/L	1		6010C	Total Recoverable
Lithium	0.14		0.040	0.0083	mg/L	5		6020A	Total Recoverable
Beryllium	0.34	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Barium	37		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	510000		2000	1200	ug/L	2		6020A	Total Recoverable
Molybdenum	4.6	J	10	1.1	ug/L	1		6020A	Total Recoverable
Arsenic	12		5.0	0.75	ug/L	1		6020A	Total Recoverable
Lead	1.8		1.0	0.45	ug/L	1		6020A	Total Recoverable
Selenium	1600		5.0	0.89	ug/L	1		6020A	Total Recoverable
Chromium	6.7	B	2.0	0.98	ug/L	1		6020A	Total Recoverable
Cobalt	1.6		1.0	0.19	ug/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.98	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	5000		40	19	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-14D (Continued)

Lab Sample ID: 280-113243-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	19		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113243-1	MW-5	Ground Water	08/13/18 10:30	08/16/18 10:05
280-113243-2	MW-14	Ground Water	08/13/18 16:15	08/16/18 10:05
280-113243-3	MW-15	Water	08/13/18 13:40	08/16/18 10:05
280-113243-4	MW-16	Water	08/13/18 12:45	08/16/18 10:05
280-113243-5	MW-14D	Water	08/14/18 10:30	08/16/18 10:05

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-5
Date Collected: 08/13/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.2**		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 20:48	1

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.3**		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 20:53	1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.56**		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 20:58	1

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.60**		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 21:07	1

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.2**		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 21:26	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-5
Date Collected: 08/13/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00078**	**J**	0.0020	0.00057	mg/L		08/20/18 14:00	08/24/18 17:43	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	08/24/18 17:43	1
Barium	**0.024**		0.0050	0.0022	mg/L		08/20/18 14:00	08/24/18 17:43	1
Beryllium	**0.00033**	**J ^**	0.0010	0.00031	mg/L		08/20/18 14:00	08/27/18 20:41	1
Calcium	**56**		1.0	0.58	mg/L		08/20/18 14:00	08/24/18 17:43	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/24/18 17:43	1
Cobalt	**0.00083**	**J**	0.0010	0.00019	mg/L		08/20/18 14:00	08/24/18 17:43	1
Chromium	**0.010**	**B**	0.0020	0.00098	mg/L		08/20/18 14:00	08/24/18 17:43	1
Molybdenum	**0.0074**	**J**	0.010	0.0011	mg/L		08/20/18 14:00	08/24/18 17:43	1
Lead	**0.00091**	**J**	0.0010	0.00045	mg/L		08/20/18 14:00	08/24/18 17:43	1
Selenium	**0.0037**	**J**	0.0050	0.00089	mg/L		08/20/18 14:00	08/24/18 17:43	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/24/18 17:43	1
Lithium	**0.054**		0.0080	0.0017	mg/L		08/20/18 14:00	08/24/18 17:43	1

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.23**	**J**	1.0	0.21	ug/L		08/20/18 14:00	08/24/18 17:57	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.14		0.040	0.0083	mg/L		08/20/18 14:00	08/28/18 13:39	5
Beryllium	0.58	J ^	1.0	0.31	ug/L		08/20/18 14:00	08/24/18 17:57	1
Barium	29		5.0	2.2	ug/L		08/20/18 14:00	08/24/18 17:57	1
Calcium	490000		1000	580	ug/L		08/20/18 14:00	08/24/18 17:57	1
Molybdenum	5.9	J	10	1.1	ug/L		08/20/18 14:00	08/24/18 17:57	1
Arsenic	12		5.0	0.75	ug/L		08/20/18 14:00	08/24/18 17:57	1
Lead	0.46	J	1.0	0.45	ug/L		08/20/18 14:00	08/24/18 17:57	1
Selenium	1600		5.0	0.89	ug/L		08/20/18 14:00	08/24/18 17:57	1
Chromium	8.1	B	2.0	0.98	ug/L		08/20/18 14:00	08/24/18 17:57	1
Cobalt	0.98	J	1.0	0.19	ug/L		08/20/18 14:00	08/24/18 17:57	1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.21	ug/L		08/20/18 14:00	08/24/18 18:02	1
Lithium	0.056		0.016	0.0033	mg/L		08/20/18 14:00	08/28/18 13:43	2
Beryllium	0.91	J ^	1.0	0.31	ug/L		08/20/18 14:00	08/24/18 18:02	1
Barium	130		5.0	2.2	ug/L		08/20/18 14:00	08/24/18 18:02	1
Calcium	190000		1000	580	ug/L		08/20/18 14:00	08/24/18 18:02	1
Molybdenum	7.1	J	10	1.1	ug/L		08/20/18 14:00	08/24/18 18:02	1
Arsenic	4.7	J	5.0	0.75	ug/L		08/20/18 14:00	08/24/18 18:02	1
Lead	6.6		1.0	0.45	ug/L		08/20/18 14:00	08/24/18 18:02	1
Selenium	170		5.0	0.89	ug/L		08/20/18 14:00	08/24/18 18:02	1
Chromium	37	B	2.0	0.98	ug/L		08/20/18 14:00	08/24/18 18:02	1
Cobalt	3.9		1.0	0.19	ug/L		08/20/18 14:00	08/24/18 18:02	1

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.28	J	1.0	0.21	ug/L		08/20/18 14:00	08/24/18 18:11	1
Lithium	0.055		0.016	0.0033	mg/L		08/20/18 14:00	08/28/18 13:52	2
Beryllium	0.84	J ^	1.0	0.31	ug/L		08/20/18 14:00	08/24/18 18:11	1
Barium	200		5.0	2.2	ug/L		08/20/18 14:00	08/24/18 18:11	1
Calcium	62000		1000	580	ug/L		08/20/18 14:00	08/24/18 18:11	1
Molybdenum	38		10	1.1	ug/L		08/20/18 14:00	08/24/18 18:11	1
Arsenic	5.1		5.0	0.75	ug/L		08/20/18 14:00	08/24/18 18:11	1
Lead	7.8		1.0	0.45	ug/L		08/20/18 14:00	08/24/18 18:11	1
Selenium	8.2		5.0	0.89	ug/L		08/20/18 14:00	08/24/18 18:11	1
Chromium	39	B	2.0	0.98	ug/L		08/20/18 14:00	08/24/18 18:11	1
Cobalt	4.9		1.0	0.19	ug/L		08/20/18 14:00	08/24/18 18:11	1

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.21	ug/L		08/20/18 14:00	08/24/18 18:21	1
Lithium	0.14		0.040	0.0083	mg/L		08/20/18 14:00	08/28/18 14:01	5
Beryllium	0.34	J ^	1.0	0.31	ug/L		08/20/18 14:00	08/24/18 18:21	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	37		5.0	2.2	ug/L		08/20/18 14:00	08/24/18 18:21	1
Calcium	510000		2000	1200	ug/L		08/20/18 14:00	08/27/18 21:17	2
Molybdenum	4.6	J	10	1.1	ug/L		08/20/18 14:00	08/24/18 18:21	1
Arsenic	12		5.0	0.75	ug/L		08/20/18 14:00	08/24/18 18:21	1
Lead	1.8		1.0	0.45	ug/L		08/20/18 14:00	08/24/18 18:21	1
Selenium	1600		5.0	0.89	ug/L		08/20/18 14:00	08/24/18 18:21	1
Chromium	6.7	B	2.0	0.98	ug/L		08/20/18 14:00	08/24/18 18:21	1
Cobalt	1.6		1.0	0.19	ug/L		08/20/18 14:00	08/24/18 18:21	1

General Chemistry

Client Sample ID: MW-5
Date Collected: 08/13/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU			08/22/18 20:54	1
Temperature	20.7	HF	1.0	1.0	Degrees C			08/22/18 20:54	1
Chloride	18		3.0	0.25	mg/L			08/23/18 22:47	1
Fluoride	0.37	J	0.50	0.060	mg/L			08/23/18 22:47	1
Sulfate	210		50	2.3	mg/L			08/23/18 23:09	10
Total Dissolved Solids (TDS)	760		10	4.7	mg/L			08/19/18 16:56	1
Total Suspended Solids	49		4.0	1.1	mg/L			08/19/18 11:59	1

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			08/22/18 17:39	1
Temperature	19.0	HF	1.0	1.0	Degrees C			08/22/18 17:39	1
Chloride	200		3.0	0.25	mg/L			08/23/18 23:31	1
Fluoride	1.0		0.50	0.060	mg/L			08/23/18 23:31	1
Sulfate	3000		100	4.6	mg/L			08/31/18 00:46	20
Total Dissolved Solids (TDS)	5000		40	19	mg/L			08/19/18 16:56	1
Total Suspended Solids	26		4.0	1.1	mg/L			08/19/18 11:59	1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/22/18 17:45	1
Temperature	19.4	HF	1.0	1.0	Degrees C			08/22/18 17:45	1
Chloride	86		3.0	0.25	mg/L			08/23/18 23:53	1
Fluoride	0.81		0.50	0.060	mg/L			08/23/18 23:53	1
Sulfate	1000		100	4.6	mg/L			08/24/18 00:16	20
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L			08/19/18 16:56	1
Total Suspended Solids	340		6.7	1.8	mg/L			08/19/18 11:59	1

General Chemistry

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			08/22/18 17:50	1
Temperature	19.6	HF	1.0	1.0	Degrees C			08/22/18 17:50	1
Chloride	54		3.0	0.25	mg/L			08/24/18 00:38	1
Fluoride	1.3		0.50	0.060	mg/L			08/24/18 00:38	1
Sulfate	170		5.0	0.23	mg/L			08/24/18 00:38	1
Total Dissolved Solids (TDS)	720		10	4.7	mg/L			08/19/18 16:56	1
Total Suspended Solids	870		20	5.5	mg/L			08/19/18 11:59	1

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			08/22/18 17:54	1
Temperature	19.8	HF	1.0	1.0	Degrees C			08/22/18 17:54	1
Chloride	200		6.0	0.51	mg/L			08/24/18 01:22	2
Fluoride	0.98	J	1.0	0.12	mg/L			08/24/18 01:22	2
Sulfate	3800		250	12	mg/L			08/24/18 01:45	50
Total Dissolved Solids (TDS)	5000		40	19	mg/L			08/19/18 16:56	1
Total Suspended Solids	19		4.0	1.1	mg/L			08/19/18 11:59	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.605		0.127	0.138	1.00	0.0754	pCi/L	08/21/18 10:37	09/12/18 08:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*08/21/18 10:37*	*09/12/18 08:06*	*1*

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.864		0.219	0.233	1.00	0.146	pCi/L	08/21/18 10:37	09/12/18 08:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*08/21/18 10:37*	*09/12/18 08:06*	*1*

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.772		0.200	0.212	1.00	0.137	pCi/L	08/21/18 10:37	09/12/18 08:06	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110	08/21/18 10:37	09/12/18 08:06	1

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.608		0.123	0.134	1.00	0.0795	pCi/L	08/21/18 10:37	09/12/18 08:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110	08/21/18 10:37	09/12/18 08:07	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.553		0.253	0.258	1.00	0.363	pCi/L	08/21/18 11:02	08/24/18 16:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110	08/21/18 11:02	08/24/18 16:35	1
Y Carrier	85.6		40 - 110	08/21/18 11:02	08/24/18 16:35	1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.680	U	0.456	0.460	1.00	0.696	pCi/L	08/21/18 11:02	08/24/18 16:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		40 - 110	08/21/18 11:02	08/24/18 16:35	1
Y Carrier	88.2		40 - 110	08/21/18 11:02	08/24/18 16:35	1

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.827		0.436	0.442	1.00	0.642	pCi/L	08/21/18 11:02	08/24/18 16:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110	08/21/18 11:02	08/24/18 16:35	1
Y Carrier	93.1		40 - 110	08/21/18 11:02	08/24/18 16:35	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.677		0.253	0.261	1.00	0.340	pCi/L	08/21/18 11:02	08/24/18 16:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:35*	*1*
Y Carrier	*87.1*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:35*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-14
Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.16		0.283	0.293	5.00	0.363	pCi/L		09/18/18 13:41	1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.54		0.506	0.516	5.00	0.696	pCi/L		09/18/18 13:41	1

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.60		0.480	0.490	5.00	0.642	pCi/L		09/18/18 13:41	1

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.28		0.281	0.293	5.00	0.340	pCi/L		09/18/18 13:41	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341588/1-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 19:47	1

Lab Sample ID: LCS 240-341588/2-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120

Lab Sample ID: 280-113243-F-2-B MS
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.2	F1	1.00	2.20		mg/L		99	75 - 125

Lab Sample ID: 280-113243-F-2-C MSD
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	1.2	F1	1.00	1.94	F1	mg/L		73	75 - 125	13	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341588/1-A
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/24/18 17:02	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/24/18 17:02	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/24/18 17:02	1
Lithium	ND		0.0080	0.0017	mg/L		08/20/18 14:00	08/24/18 17:02	1
Beryllium	ND	^	0.0010	0.00031	mg/L		08/20/18 14:00	08/24/18 17:02	1
Barium	ND		0.0050	0.0022	mg/L		08/20/18 14:00	08/24/18 17:02	1
Calcium	ND		1.0	0.58	mg/L		08/20/18 14:00	08/24/18 17:02	1
Molybdenum	ND		0.010	0.0011	mg/L		08/20/18 14:00	08/24/18 17:02	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	08/24/18 17:02	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/24/18 17:02	1
Selenium	ND		0.0050	0.00089	mg/L		08/20/18 14:00	08/24/18 17:02	1
Chromium	0.00196	J	0.0020	0.00098	mg/L		08/20/18 14:00	08/24/18 17:02	1
Cobalt	ND		0.0010	0.00019	mg/L		08/20/18 14:00	08/24/18 17:02	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-341588/3-A
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120
Thallium	0.250	0.289		mg/L		116	80 - 120
Cadmium	1.00	0.994		mg/L		99	80 - 120
Lithium	0.100	0.0966		mg/L		97	80 - 120
Beryllium	1.00	1.11	^	mg/L		111	80 - 120
Barium	1.00	1.04		mg/L		104	80 - 120
Calcium	10.0	9.81		mg/L		98	80 - 120
Molybdenum	0.100	0.0968		mg/L		97	80 - 120
Arsenic	1.00	0.911		mg/L		91	80 - 120
Lead	1.00	1.16		mg/L		116	80 - 120
Selenium	1.00	0.943		mg/L		94	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Cobalt	1.00	1.08		mg/L		108	80 - 120

Lab Sample ID: 280-113243-F-2-D MS
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.00079	J	0.100	0.115		mg/L		114	75 - 125
Thallium	ND		0.250	0.278		mg/L		111	75 - 125
Cadmium	0.00031	J	1.00	0.977		mg/L		98	75 - 125
Lithium	0.15	F1	0.100	0.281	F1	mg/L		134	75 - 125
Beryllium	0.00093	J F1 ^	1.00	1.29	F1 ^	mg/L		129	75 - 125
Barium	0.025		1.00	1.07		mg/L		104	75 - 125
Molybdenum	0.0056	J	0.100	0.126		mg/L		121	75 - 125
Arsenic	0.0097		1.00	1.08		mg/L		107	75 - 125
Lead	ND		1.00	1.19		mg/L		119	75 - 125
Selenium	1.5	F1	1.00	2.81	F1	mg/L		130	75 - 125
Chromium	0.0064	B	1.00	1.00		mg/L		100	75 - 125
Cobalt	0.0013		1.00	1.02		mg/L		101	75 - 125

Lab Sample ID: 280-113243-F-2-D MS ^2
Matrix: Water
Analysis Batch: 342797

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	520		10.0	532	4	mg/L		161	75 - 125

Lab Sample ID: 280-113243-F-2-E MSD
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.00079	J	0.100	0.0953		mg/L		94	75 - 125	19	20
Thallium	ND		0.250	0.261		mg/L		105	75 - 125	6	20
Cadmium	0.00031	J	1.00	0.923		mg/L		92	75 - 125	6	20
Lithium	0.15	F1	0.100	0.245		mg/L		99	75 - 125	14	20
Beryllium	0.00093	J F1 ^	1.00	1.25	^	mg/L		125	75 - 125	3	20

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-113243-F-2-E MSD
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.025		1.00	0.962		mg/L		94	75 - 125	10	20
Molybdenum	0.0056	J	0.100	0.105		mg/L		99	75 - 125	19	20
Arsenic	0.0097		1.00	0.999		mg/L		99	75 - 125	8	20
Lead	ND		1.00	1.10		mg/L		110	75 - 125	8	20
Selenium	1.5	F1	1.00	2.57		mg/L		106	75 - 125	9	20
Chromium	0.0064	B	1.00	0.935		mg/L		93	75 - 125	7	20
Cobalt	0.0013		1.00	0.952		mg/L		95	75 - 125	6	20

Lab Sample ID: 280-113243-F-2-E MSD ^2
Matrix: Water
Analysis Batch: 342797

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 341588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	520		10.0	555	4	mg/L		391	75 - 125	4	20

Method: 9040B - pH

Lab Sample ID: LCS 280-427288/4
Matrix: Water
Analysis Batch: 427288

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: LCS 280-427288/55
Matrix: Water
Analysis Batch: 427288

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-427269/6
Matrix: Water
Analysis Batch: 427269

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/23/18 11:56	1
Fluoride	ND		0.50	0.060	mg/L			08/23/18 11:56	1
Sulfate	ND		5.0	0.23	mg/L			08/23/18 11:56	1

Lab Sample ID: LCS 280-427269/4
Matrix: Water
Analysis Batch: 427269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	97.7		mg/L		98	90 - 110
Fluoride	5.00	5.16		mg/L		103	90 - 110

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-427269/4
Matrix: Water
Analysis Batch: 427269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	97.1		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-427269/5
Matrix: Water
Analysis Batch: 427269

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	97.6		mg/L		98	90 - 110	0	10
Fluoride	5.00	5.16		mg/L		103	90 - 110	0	10
Sulfate	100	97.1		mg/L		97	90 - 110	0	10

Lab Sample ID: MRL 280-427269/3
Matrix: Water
Analysis Batch: 427269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.37	J	mg/L		95	50 - 150
Fluoride	0.200	0.179	J	mg/L		90	50 - 150
Sulfate	2.50	2.20	J	mg/L		88	50 - 150

Lab Sample ID: MB 280-428098/6
Matrix: Water
Analysis Batch: 428098

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			08/30/18 12:55	1

Lab Sample ID: LCS 280-428098/4
Matrix: Water
Analysis Batch: 428098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	97.4		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-428098/5
Matrix: Water
Analysis Batch: 428098

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	97.5		mg/L		97	90 - 110	0	10

Lab Sample ID: MRL 280-428098/3
Matrix: Water
Analysis Batch: 428098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	3.45	J	mg/L		138	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-426741/1
Matrix: Water
Analysis Batch: 426741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/19/18 16:56	1

Lab Sample ID: LCS 280-426741/2
Matrix: Water
Analysis Batch: 426741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	514		mg/L		103	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-426735/1
Matrix: Water
Analysis Batch: 426735

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/19/18 11:59	1

Lab Sample ID: LCS 280-426735/2
Matrix: Water
Analysis Batch: 426735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	93.2		mg/L		93	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-384214/11-A
Matrix: Water
Analysis Batch: 388632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384214

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1324		0.0679	0.0689	1.00	0.0719	pCi/L	08/21/18 10:37	09/12/18 09:49	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/21/18 10:37*	*09/12/18 09:49*	*1*

Lab Sample ID: LCS 160-384214/1-A
Matrix: Water
Analysis Batch: 388634

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384214

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.92		1.10	1.00	0.0724	pCi/L	96	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*

Lab Sample ID: LCSD 160-384214/2-A
Matrix: Water
Analysis Batch: 388634

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384214

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.05		1.12	1.00	0.0580	pCi/L	97	68 - 137	0.06	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.8*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-384220/11-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384220

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.05762	U	0.135	0.135	1.00	0.263	pCi/L	08/21/18 11:02	08/24/18 16:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:36*	*1*
Y Carrier	*97.2*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:36*	*1*

Lab Sample ID: LCS 160-384220/1-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384220

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	10.77		1.20	1.00	0.331	pCi/L	97	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*
Y Carrier	*89.7*		*40 - 110*

Lab Sample ID: LCSD 160-384220/2-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384220

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	12.35		1.35	1.00	0.335	pCi/L	112	56 - 140	0.62	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.8*		*40 - 110*
Y Carrier	*90.1*		*40 - 110*

Metals

Prep Batch: 341588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total Recoverable	Ground Water	3005A	
280-113243-2	MW-14	Total Recoverable	Ground Water	3005A	
280-113243-3	MW-15	Total Recoverable	Water	3005A	
280-113243-4	MW-16	Total Recoverable	Water	3005A	
280-113243-5	MW-14D	Total Recoverable	Water	3005A	
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341588/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341588/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-113243-F-2-B MS	Matrix Spike	Dissolved	Water	3005A	
280-113243-F-2-C MSD	Matrix Spike Duplicate	Dissolved	Water	3005A	
280-113243-F-2-D MS	Matrix Spike	Dissolved	Water	3005A	
280-113243-F-2-D MS ^2	Matrix Spike	Dissolved	Water	3005A	
280-113243-F-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	3005A	
280-113243-F-2-E MSD ^2	Matrix Spike Duplicate	Dissolved	Water	3005A	

Analysis Batch: 341961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total Recoverable	Ground Water	6010C	341588
280-113243-2	MW-14	Total Recoverable	Ground Water	6010C	341588
280-113243-3	MW-15	Total Recoverable	Water	6010C	341588
280-113243-4	MW-16	Total Recoverable	Water	6010C	341588
280-113243-5	MW-14D	Total Recoverable	Water	6010C	341588
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	6010C	341588
LCS 240-341588/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341588
280-113243-F-2-B MS	Matrix Spike	Dissolved	Water	6010C	341588
280-113243-F-2-C MSD	Matrix Spike Duplicate	Dissolved	Water	6010C	341588

Analysis Batch: 342670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total Recoverable	Ground Water	6020A	341588
280-113243-2	MW-14	Total Recoverable	Ground Water	6020A	341588
280-113243-3	MW-15	Total Recoverable	Water	6020A	341588
280-113243-4	MW-16	Total Recoverable	Water	6020A	341588
280-113243-5	MW-14D	Total Recoverable	Water	6020A	341588
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	6020A	341588
LCS 240-341588/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341588
280-113243-F-2-D MS	Matrix Spike	Dissolved	Water	6020A	341588
280-113243-F-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	6020A	341588

Analysis Batch: 342797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total Recoverable	Ground Water	6020A	341588
280-113243-5	MW-14D	Total Recoverable	Water	6020A	341588
280-113243-F-2-D MS ^2	Matrix Spike	Dissolved	Water	6020A	341588
280-113243-F-2-E MSD ^2	Matrix Spike Duplicate	Dissolved	Water	6020A	341588

Analysis Batch: 342982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-2	MW-14	Total Recoverable	Ground Water	6020A	341588
280-113243-3	MW-15	Total Recoverable	Water	6020A	341588
280-113243-4	MW-16	Total Recoverable	Water	6020A	341588

Metals (Continued)

Analysis Batch: 342982 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-5	MW-14D	Total Recoverable	Water	6020A	341588

General Chemistry

Analysis Batch: 426735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total/NA	Ground Water	SM 2540D	
280-113243-2	MW-14	Total/NA	Ground Water	SM 2540D	
280-113243-3	MW-15	Total/NA	Water	SM 2540D	
280-113243-4	MW-16	Total/NA	Water	SM 2540D	
280-113243-5	MW-14D	Total/NA	Water	SM 2540D	
MB 280-426735/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-426735/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 426741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total/NA	Ground Water	SM 2540C	
280-113243-2	MW-14	Total/NA	Ground Water	SM 2540C	
280-113243-3	MW-15	Total/NA	Water	SM 2540C	
280-113243-4	MW-16	Total/NA	Water	SM 2540C	
280-113243-5	MW-14D	Total/NA	Water	SM 2540C	
MB 280-426741/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-426741/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 427269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total/NA	Ground Water	9056A	
280-113243-1	MW-5	Total/NA	Ground Water	9056A	
280-113243-2	MW-14	Total/NA	Ground Water	9056A	
280-113243-3	MW-15	Total/NA	Water	9056A	
280-113243-3	MW-15	Total/NA	Water	9056A	
280-113243-4	MW-16	Total/NA	Water	9056A	
280-113243-5	MW-14D	Total/NA	Water	9056A	
280-113243-5	MW-14D	Total/NA	Water	9056A	
MB 280-427269/6	Method Blank	Total/NA	Water	9056A	
LCS 280-427269/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-427269/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-427269/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 427288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-1	MW-5	Total/NA	Ground Water	9040B	
280-113243-2	MW-14	Total/NA	Ground Water	9040B	
280-113243-3	MW-15	Total/NA	Water	9040B	
280-113243-4	MW-16	Total/NA	Water	9040B	
280-113243-5	MW-14D	Total/NA	Water	9040B	
LCS 280-427288/4	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-427288/55	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 428098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-2	MW-14	Total/NA	Ground Water	9056A	
MB 280-428098/6	Method Blank	Total/NA	Water	9056A	
LCS 280-428098/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-428098/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-428098/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 384214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-2	MW-14	Total/NA	Ground Water	PrecSep-21	
280-113243-3	MW-15	Total/NA	Water	PrecSep-21	
280-113243-4	MW-16	Total/NA	Water	PrecSep-21	
280-113243-5	MW-14D	Total/NA	Water	PrecSep-21	
MB 160-384214/11-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-384214/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-384214/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113243-2	MW-14	Total/NA	Ground Water	PrecSep_0	
280-113243-3	MW-15	Total/NA	Water	PrecSep_0	
280-113243-4	MW-16	Total/NA	Water	PrecSep_0	
280-113243-5	MW-14D	Total/NA	Water	PrecSep_0	
MB 160-384220/11-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-384220/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-384220/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-5

Date Collected: 08/13/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 20:48	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 17:43	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342797	08/27/18 20:41	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:54	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	427269	08/23/18 22:47	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	427269	08/23/18 23:09	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN

Client Sample ID: MW-14

Date Collected: 08/13/18 16:15
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 20:53	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 17:57	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		5			342982	08/28/18 13:39	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 17:39	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	427269	08/23/18 23:31	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	428098	08/31/18 00:46	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.10 mL	1.0 g	384214	08/21/18 10:37	JLC	TAL SL
Total/NA	Analysis	9315		1			388634	09/12/18 08:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.10 mL	1.0 g	384220	08/21/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1			385125	08/24/18 16:35	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			390005	09/18/18 13:41	RTM	TAL SL

Client Sample ID: MW-15

Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 20:58	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-15
Date Collected: 08/13/18 13:40
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		1			342670	08/24/18 18:02	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			342982	08/28/18 13:43	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 17:45	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	427269	08/23/18 23:53	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	427269	08/24/18 00:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	150 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.16 mL	1.0 g	384214	08/21/18 10:37	JLC	TAL SL
Total/NA	Analysis	9315		1			388634	09/12/18 08:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			500.16 mL	1.0 g	384220	08/21/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1			385125	08/24/18 16:35	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			390005	09/18/18 13:41	RTM	TAL SL

Client Sample ID: MW-16
Date Collected: 08/13/18 12:45
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 21:07	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 18:11	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			342982	08/28/18 13:52	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 17:50	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	427269	08/24/18 00:38	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.13 mL	1.0 g	384214	08/21/18 10:37	JLC	TAL SL
Total/NA	Analysis	9315		1			388634	09/12/18 08:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			500.13 mL	1.0 g	384220	08/21/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1			385125	08/24/18 16:35	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			390005	09/18/18 13:41	RTM	TAL SL

Client Sample ID: MW-14D
Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 21:26	KLC	TAL CAN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Client Sample ID: MW-14D

Date Collected: 08/14/18 10:30
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113243-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 18:21	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			342797	08/27/18 21:17	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		5			342982	08/28/18 14:01	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 17:54	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	427269	08/24/18 01:22	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	427269	08/24/18 01:45	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	384214	08/21/18 10:37	JLC	TAL SL
Total/NA	Analysis	9315		1			388634	09/12/18 08:07	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	384220	08/21/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1			385125	08/24/18 16:35	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			390005	09/18/18 13:41	RTM	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113243-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Ground Water	Temperature
9040B		Water	Temperature
9056A		Ground Water	Chloride
9056A		Ground Water	Fluoride
9056A		Ground Water	Sulfate
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113243-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
HDR, Inc.	Matt Rohr	8/15/18	180818
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
9781 S. Meridian Blvd. Ste. 400	(303) 764-1537		
City / State / Zip Code	**Site Contact**	**Lab Contact**	
Englewood / CO / 80209	N. Hanrahan	S. Rothmeyer	
Project Name and Location (State)	**Carrier/Waybill Number**		
Valmont - Boulder, CO			
Contract/Purchase Order/Quote No.			
10025968			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: 6010C/6020A-see list	Anions (Cl, Fl, SO4), pH	2540C-TDS	Ra226/228	TSS	Special Instructions/ Conditions of Receipt
MW-5	8/13/18	1030		X			X		X				X	X	X	X	X	Total Metals List: B, Ca, As, Ba, Be, Cd, Cr,
MW-14	8/13/18	1615		X			X		X				X	X	X	X	X	Co, Pb, Li, Mo, Se
MW-15	8/13/18	1340		X			X		X				X	X	X	X	X	
MW-16	8/13/18	1245		X			X		X				X	X	X	X	X	
MW-14D	8/14/18	1030		X			X		X				X	X	X	X	X	

280-113243 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	8/16/2018	10:05AM	1. Received By	8/16/18	1005
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: 0.1, 1.1, 0.3 to 0.4 IRS XFERED BY KO 08-16-18

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451483.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113243-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/12/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-14 (280-113243-2)	8/13/18	16:15 Mountain		Water			X	X	2	
MW-15 (280-113243-3)	8/13/18	13:40 Mountain		Water			X	X	2	
MW-16 (280-113243-4)	8/13/18	12:45 Mountain		Water			X	X	2	
MW-14D (280-113243-5)	8/14/18	10:30 Mountain		Water			X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8-17-18 1508	TAL Den	[signature]	8-18-18 0835	TAL SL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451482.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113243-2
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 9/11/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/FILTRATION (MOD) Copy Analytes	6020A/FILTRATION (MOD) 12 Metals	6010C/FIELD_FLTRD (MOD) Copy Analytes	6020A/FIELD_FLTRD (MOD) 12 Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:									S19, W81
MW-5 (280-113243-1)	8/13/18	10:30 Mountain		Water			X	X			2	
MW-14 (280-113243-2)	8/13/18	16:15 Mountain		Water					X	X	2	
MW-15 (280-113243-3)	8/13/18	13:40 Mountain		Water					X	X	2	
MW-16 (280-113243-4)	8/13/18	12:45 Mountain		Water					X	X	2	
MW-14D (280-113243-5)	8/14/18	10:30 Mountain		Water					X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8-17-2018 1538	TAL DEN	[signature]	8/18 9:45	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8/18 Opened on 8/18 P.M.

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0** °C) Observed Cooler Temp. 16.6 °C Corrected Cooler Temp. 16.6 °C
   IR GUN #36 (CF **-0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

_____

_____

_____

_____

_____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451482.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113243-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 9/10/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

S19

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-5 (280-113243-1)	8/13/18	10:30 Mountain		Water			X			2	Use Collision Cell
MW-14 (280-113243-2)	8/13/18	16:15 Mountain		Water				X	X	2	Use Collision Cell
MW-15 (280-113243-3)	8/13/18	13:40 Mountain		Water				X	X	2	Use Collision Cell
MW-16 (280-113243-4)	8/13/18	12:45 Mountain		Water				X	X	2	Use Collision Cell
MW-14D (280-113243-5)	8/14/18	10:30 Mountain		Water				X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*			***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*		
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 8-17-2018 1538	Company: TALDen	Received by: Pat Mcme	Date/Time: 8/18 9:45	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: P.M.

Cooler Received on 8/18 Opened on 8/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 16.6 °C Corrected Cooler Temp. 16.6 °C
   IR GUN #36 (CF -0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

pH Strip Lot# **HC849161**

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

_____

_____

_____

_____

_____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113243-1

Login Number: 113243
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113243-1

Login Number: 113243
List Number: 4
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 08/18/18 04:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113243-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
280-113243-2	MW-14	96.5

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
280-113243-3	MW-15	89.4
280-113243-4	MW-16	98.2
280-113243-5	MW-14D	94.7
LCS 160-384214/1-A	Lab Control Sample	101
LCSD 160-384214/2-A	Lab Control Sample Dup	96.8
MB 160-384214/11-A	Method Blank	101

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
280-113243-2	MW-14	96.5	85.6

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
280-113243-3	MW-15	89.4	88.2
280-113243-4	MW-16	98.2	93.1
280-113243-5	MW-14D	94.7	87.1
LCS 160-384220/1-A	Lab Control Sample	101	89.7
LCSD 160-384220/2-A	Lab Control Sample Dup	96.8	90.1
MB 160-384220/11-A	Method Blank	101	97.2

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-113249-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
9/26/2018 3:53:40 PM

Darlene Bandy, Project Manager I
(303)736-0188
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-113249-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-113249-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 8/16/2018 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.5º C, 0.7º C and 1.5º C.

Receipt Exceptions

Received approximately 800mL in 1L Nitric poly bottle for sample ID MW-6. Per conversation with client on 8/16/18, Radium testing is low priority, and Total Metals are to be run on this sample. Total Metals has been logged. Additionally, only a single 1L unpreserved poly bottle received for wet chemistries. List regarding method priority, per client, has been included in the sample notes, with preference in the following order: TSS > Anions > TDS > pH, with additional notation regarding the limited volume of the sample.

TOTAL RECOVERABLE METALS

Sample MW-4 (280-113249-1) was analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/20/2018 and analyzed on 08/21/2018.

Boron failed the recovery criteria low for the MSD performed on 280-113423-2. Refer to the QC report for details.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-4 (280-113249-1) and MW-6 (280-113249-2) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/20/2018 and analyzed on 08/24/2018 and 08/28/2018.

Chromium was detected in method blank MB 240-341588/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Samples MW-4 (280-113249-1)[5X] and MW-6 (280-113249-2)[5X] required dilution prior to analysis due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

Calcium failed the recovery criteria low for the MSD on sample 280-113243-2. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

Job ID: 280-113249-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The continuing calibration verification (CCV) associated with batch 240-342670 recovered above the upper control limit for Beryllium. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been reported. The following sample is impacted: MW-4 (280-113249-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples MW-4 (280-113249-1) and MW-6 (280-113249-2) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/19/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples MW-4 (280-113249-1) and MW-6 (280-113249-2) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/19/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-113231-1. Refer to the QC report for details. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples MW-4 (280-113249-1) and MW-6 (280-113249-2) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/22/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-4 (280-113249-1) and MW-6 (280-113249-2) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/24/2018 and 09/05/2018.

Sulfate failed the recovery criteria high for the MSD of sample 280-113320-3 in batch 280-427272. Sulfate failed the recovery criteria low for the MS/MSD of sample 280-113644-5 in batch 280-428449. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

Samples MW-4 (280-113249-1)[100X], MW-4 (280-113249-1)[5X] and MW-6 (280-113249-2)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Sample MW-4 (280-113249-1) was analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/21/2018 and analyzed on 09/12/2018.

Radium-226 was detected in method blank MB 160-384214/11-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Sample aliquot for MW-4 (280-113249-1) was reduced due to potential matrix interference. Sample was brown, opaque, contained heavy sediment levels, and had a strong odor.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-4 (280-113249-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Job ID: 280-113249-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Sample MW-4 (280-113249-1) was analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/21/2018 and analyzed on 08/24/2018.

Sample aliquot for MW-4 (280-113249-1) was reduced due to potential matrix interference. Sample was brown, opaque, contained heavy sediment levels, and had a strong odor.

The following samples did not meet the requested limit (RL) due to the reduced sample volume attributed to the presence of matrix interferences: MW-4 (280-113249-1). The data have been reported with this narrative.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-4 (280-113249-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Sample MW-4 (280-113249-1) was analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/18/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Client Sample ID: MW-4 — Lab Sample ID: 280-113249-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.4		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00088	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0074		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.16		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00097	J ^	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00067	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.011		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.039	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.017		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.013		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.30		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00020	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.21		0.040	0.0083	mg/L	5		6020A	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	530		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	4.0		2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	5600		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	10000		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1100		29	7.9	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6 — Lab Sample ID: 280-113249-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00077	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0043	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.17		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00055	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.011		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.052	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0057	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.020		0.0010	0.00045	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Client Sample ID: MW-6 (Continued)

Lab Sample ID: 280-113249-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00021	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.087		0.040	0.0083	mg/L	5		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	480		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	0.16	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2700		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	220		8.3	2.3	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113249-1	MW-4	Water	08/14/18 11:00	08/16/18 10:05
280-113249-2	MW-6	Water	08/13/18 11:05	08/16/18 10:05

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.4		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 21:36	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00088	J	0.0020	0.00057	mg/L		08/20/18 14:00	08/24/18 18:30	1
Arsenic	0.0074		0.0050	0.00075	mg/L		08/20/18 14:00	08/24/18 18:30	1
Barium	0.16		0.0050	0.0022	mg/L		08/20/18 14:00	08/24/18 18:30	1
Beryllium	0.00097	J ^	0.0010	0.00031	mg/L		08/20/18 14:00	08/24/18 18:30	1
Cadmium	0.00067	J	0.0010	0.00021	mg/L		08/20/18 14:00	08/24/18 18:30	1
Cobalt	0.011		0.0010	0.00019	mg/L		08/20/18 14:00	08/24/18 18:30	1
Chromium	0.039	B	0.0020	0.00098	mg/L		08/20/18 14:00	08/24/18 18:30	1
Molybdenum	0.017		0.010	0.0011	mg/L		08/20/18 14:00	08/24/18 18:30	1
Lead	0.013		0.0010	0.00045	mg/L		08/20/18 14:00	08/24/18 18:30	1
Selenium	0.30		0.0050	0.00089	mg/L		08/20/18 14:00	08/24/18 18:30	1
Thallium	0.00020	J	0.0010	0.00020	mg/L		08/20/18 14:00	08/24/18 18:30	1
Lithium	0.21		0.040	0.0083	mg/L		08/20/18 14:00	08/28/18 14:19	5
Calcium	430		1.0	0.58	mg/L		08/20/18 14:00	08/24/18 18:30	1

Client Sample ID: MW-6
Date Collected: 08/13/18 11:05
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00077	J	0.0020	0.00057	mg/L		08/20/18 14:00	08/24/18 18:34	1
Arsenic	0.0043	J	0.0050	0.00075	mg/L		08/20/18 14:00	08/24/18 18:34	1
Barium	0.17		0.0050	0.0022	mg/L		08/20/18 14:00	08/24/18 18:34	1
Beryllium	ND		0.0050	0.0015	mg/L		08/20/18 14:00	08/28/18 14:23	5
Cadmium	0.00055	J	0.0010	0.00021	mg/L		08/20/18 14:00	08/24/18 18:34	1
Cobalt	0.011		0.0010	0.00019	mg/L		08/20/18 14:00	08/24/18 18:34	1
Chromium	0.052	B	0.0020	0.00098	mg/L		08/20/18 14:00	08/24/18 18:34	1
Molybdenum	0.0057	J	0.010	0.0011	mg/L		08/20/18 14:00	08/24/18 18:34	1
Lead	0.020		0.0010	0.00045	mg/L		08/20/18 14:00	08/24/18 18:34	1
Selenium	0.012		0.0050	0.00089	mg/L		08/20/18 14:00	08/24/18 18:34	1
Thallium	0.00021	J	0.0010	0.00020	mg/L		08/20/18 14:00	08/24/18 18:34	1
Lithium	0.087		0.040	0.0083	mg/L		08/20/18 14:00	08/28/18 14:23	5
Calcium	390		1.0	0.58	mg/L		08/20/18 14:00	08/24/18 18:34	1

General Chemistry

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/22/18 17:59	1
Temperature	19.7	HF	1.0	1.0	Degrees C			08/22/18 17:59	1
Chloride	530		15	1.3	mg/L			08/24/18 04:32	5
Fluoride	4.0		2.5	0.30	mg/L			09/05/18 01:20	5

General Chemistry (Continued)

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5600		500	23	mg/L			09/05/18 01:42	100
Total Dissolved Solids (TDS)	10000		100	47	mg/L			08/19/18 16:56	1
Total Suspended Solids	1100		29	7.9	mg/L			08/19/18 11:59	1

Client Sample ID: MW-6
Date Collected: 08/13/18 11:05
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/22/18 20:45	1
Temperature	21.1	HF	1.0	1.0	Degrees C			08/22/18 20:45	1
Chloride	480		60	5.1	mg/L			08/24/18 06:23	20
Fluoride	0.16	J	0.50	0.060	mg/L			09/05/18 02:05	1
Sulfate	1200		100	4.6	mg/L			08/24/18 06:23	20
Total Dissolved Solids (TDS)	2700		20	9.4	mg/L			08/19/18 16:56	1
Total Suspended Solids	220		8.3	2.3	mg/L			08/19/18 11:59	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	9.67		1.06	1.37	1.00	0.346	pCi/L	08/21/18 10:37	09/12/18 13:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.4*		*40 - 110*	*08/21/18 10:37*	*09/12/18 13:28*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	11.1	G	1.65	1.93	1.00	1.44	pCi/L	08/21/18 11:02	08/24/18 16:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.4*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:35*	*1*
Y Carrier	*90.8*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:35*	*1*

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-4
Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	20.7		1.96	2.37	5.00	1.44	pCi/L		09/18/18 13:41	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341588/1-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 19:47	1

Lab Sample ID: LCS 240-341588/2-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341588/1-A
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/24/18 17:02	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	08/24/18 17:02	1
Barium	ND		0.0050	0.0022	mg/L		08/20/18 14:00	08/24/18 17:02	1
Beryllium	ND	^	0.0010	0.00031	mg/L		08/20/18 14:00	08/24/18 17:02	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/24/18 17:02	1
Cobalt	ND		0.0010	0.00019	mg/L		08/20/18 14:00	08/24/18 17:02	1
Chromium	0.00196	J	0.0020	0.00098	mg/L		08/20/18 14:00	08/24/18 17:02	1
Molybdenum	ND		0.010	0.0011	mg/L		08/20/18 14:00	08/24/18 17:02	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/24/18 17:02	1
Selenium	ND		0.0050	0.00089	mg/L		08/20/18 14:00	08/24/18 17:02	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/24/18 17:02	1
Lithium	ND		0.0080	0.0017	mg/L		08/20/18 14:00	08/24/18 17:02	1
Calcium	ND		1.0	0.58	mg/L		08/20/18 14:00	08/24/18 17:02	1

Lab Sample ID: LCS 240-341588/3-A
Matrix: Water
Analysis Batch: 342670

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341588

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120
Arsenic	1.00	0.911		mg/L		91	80 - 120
Barium	1.00	1.04		mg/L		104	80 - 120
Beryllium	1.00	1.11	^	mg/L		111	80 - 120
Cadmium	1.00	0.994		mg/L		99	80 - 120
Cobalt	1.00	1.08		mg/L		108	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Molybdenum	0.100	0.0968		mg/L		97	80 - 120
Lead	1.00	1.16		mg/L		116	80 - 120
Selenium	1.00	0.943		mg/L		94	80 - 120
Thallium	0.250	0.289		mg/L		116	80 - 120
Lithium	0.100	0.0966		mg/L		97	80 - 120
Calcium	10.0	9.81		mg/L		98	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-427068/55
Matrix: Water
Analysis Batch: 427068

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 280-427288/4
Matrix: Water
Analysis Batch: 427288

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: LCS 280-427288/55
Matrix: Water
Analysis Batch: 427288

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-427272/6
Matrix: Water
Analysis Batch: 427272

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/23/18 14:05	1
Fluoride	ND		0.50	0.060	mg/L			08/23/18 14:05	1
Sulfate	ND		5.0	0.23	mg/L			08/23/18 14:05	1

Lab Sample ID: LCS 280-427272/4
Matrix: Water
Analysis Batch: 427272

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	102		mg/L		102	90 - 110
Fluoride	5.00	5.27		mg/L		105	90 - 110
Sulfate	100	104		mg/L		104	90 - 110

Lab Sample ID: LCSD 280-427272/5
Matrix: Water
Analysis Batch: 427272

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	102		mg/L		102	90 - 110	0	10
Fluoride	5.00	5.26		mg/L		105	90 - 110	0	10
Sulfate	100	104		mg/L		104	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-427272/3
Matrix: Water
Analysis Batch: 427272

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.59	J	mg/L		104	50 - 150
Fluoride	0.200	0.197	J	mg/L		99	50 - 150
Sulfate	2.50	2.48	J	mg/L		99	50 - 150

Lab Sample ID: MB 280-428449/6
Matrix: Water
Analysis Batch: 428449

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/04/18 19:23	1
Fluoride	ND		0.50	0.060	mg/L			09/04/18 19:23	1
Sulfate	ND		5.0	0.23	mg/L			09/04/18 19:23	1

Lab Sample ID: LCS 280-428449/4
Matrix: Water
Analysis Batch: 428449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.3		mg/L		99	90 - 110
Fluoride	5.00	5.27		mg/L		105	90 - 110
Sulfate	100	97.7		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-428449/5
Matrix: Water
Analysis Batch: 428449

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.0		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.26		mg/L		105	90 - 110	0	10
Sulfate	100	97.5		mg/L		97	90 - 110	0	10

Lab Sample ID: MRL 280-428449/3
Matrix: Water
Analysis Batch: 428449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.34	J	mg/L		94	50 - 150
Fluoride	0.200	0.173	J	mg/L		87	50 - 150
Sulfate	2.50	2.18	J	mg/L		87	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-426741/1
Matrix: Water
Analysis Batch: 426741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/19/18 16:56	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-426741/2
Matrix: Water
Analysis Batch: 426741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	514		mg/L		103	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-426735/1
Matrix: Water
Analysis Batch: 426735

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/19/18 11:59	1

Lab Sample ID: LCS 280-426735/2
Matrix: Water
Analysis Batch: 426735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	93.2		mg/L		93	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-384214/11-A
Matrix: Water
Analysis Batch: 388632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384214

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1324		0.0679	0.0689	1.00	0.0719	pCi/L	08/21/18 10:37	09/12/18 09:49	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/21/18 10:37*	*09/12/18 09:49*	*1*

Lab Sample ID: LCS 160-384214/1-A
Matrix: Water
Analysis Batch: 388634

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384214

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.92		1.10	1.00	0.0724	pCi/L	96	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-384214/2-A
Matrix: Water
Analysis Batch: 388634

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384214

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.05		1.12	1.00	0.0580	pCi/L	97	68 - 137	0.06	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.8*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-384220/11-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384220

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.05762	U	0.135	0.135	1.00	0.263	pCi/L	08/21/18 11:02	08/24/18 16:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:36*	*1*
Y Carrier	*97.2*		*40 - 110*	*08/21/18 11:02*	*08/24/18 16:36*	*1*

Lab Sample ID: LCS 160-384220/1-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384220

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	10.77		1.20	1.00	0.331	pCi/L	97	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*
Y Carrier	*89.7*		*40 - 110*

Lab Sample ID: LCSD 160-384220/2-A
Matrix: Water
Analysis Batch: 385125

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384220

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	12.35		1.35	1.00	0.335	pCi/L	112	56 - 140	0.62	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.8*		*40 - 110*
Y Carrier	*90.1*		*40 - 110*

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Metals

Prep Batch: 341588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total Recoverable	Water	3005A	
280-113249-2	MW-6	Total Recoverable	Water	3005A	
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341588/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341588/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 341961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total Recoverable	Water	6010C	341588
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	6010C	341588
LCS 240-341588/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341588

Analysis Batch: 342670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total Recoverable	Water	6020A	341588
280-113249-2	MW-6	Total Recoverable	Water	6020A	341588
MB 240-341588/1-A	Method Blank	Total Recoverable	Water	6020A	341588
LCS 240-341588/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341588

Analysis Batch: 342982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total Recoverable	Water	6020A	341588
280-113249-2	MW-6	Total Recoverable	Water	6020A	341588

General Chemistry

Analysis Batch: 426735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	SM 2540D	
280-113249-2	MW-6	Total/NA	Water	SM 2540D	
MB 280-426735/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-426735/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 426741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	SM 2540C	
280-113249-2	MW-6	Total/NA	Water	SM 2540C	
MB 280-426741/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-426741/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 427068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-427068/55	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 427272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	9056A	
280-113249-2	MW-6	Total/NA	Water	9056A	
MB 280-427272/6	Method Blank	Total/NA	Water	9056A	
LCS 280-427272/4	Lab Control Sample	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 427272 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 280-427272/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-427272/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 427288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	9040B	
280-113249-2	MW-6	Total/NA	Water	9040B	
LCS 280-427288/4	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-427288/55	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 428449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	9056A	
280-113249-1	MW-4	Total/NA	Water	9056A	
280-113249-2	MW-6	Total/NA	Water	9056A	
MB 280-428449/6	Method Blank	Total/NA	Water	9056A	
LCS 280-428449/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-428449/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-428449/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 384214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	PrecSep-21	
MB 160-384214/11-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-384214/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-384214/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113249-1	MW-4	Total/NA	Water	PrecSep_0	
MB 160-384220/11-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-384220/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-384220/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Client Sample ID: MW-4

Date Collected: 08/14/18 11:00
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 21:36	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 18:30	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		5			342982	08/28/18 14:19	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 17:59	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	428449	09/05/18 01:20	ARM	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	428449	09/05/18 01:42	ARM	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	427272	08/24/18 04:32	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	35 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			250.09 mL	1.0 g	384214	08/21/18 10:37	JLC	TAL SL
Total/NA	Analysis	9315		1			388634	09/12/18 13:28	CDR	TAL SL
Total/NA	Prep	PrecSep_0			250.09 mL	1.0 g	384220	08/21/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1			385125	08/24/18 16:35	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			390005	09/18/18 13:41	RTM	TAL SL

Client Sample ID: MW-6

Date Collected: 08/13/18 11:05
Date Received: 08/16/18 10:05

Lab Sample ID: 280-113249-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 18:34	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341588	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		5			342982	08/28/18 14:23	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:45	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428449	09/05/18 02:05	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	427272	08/24/18 06:23	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426741	08/19/18 16:56	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	120 mL	250 mL	426735	08/19/18 11:59	BJP	TAL DEN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113249-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113249-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TAL-4124-280 (0508)

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: HDR, Inc.	Project Manager: Matt Rohr	Date: 8/16/18	Chain of Custody Number: 180817
Address: 9781 S. Meridian Blvd Ste. 400	Telephone Number (Area Code)/Fax Number: (303) 764-1537	Lab Number:	Page 1 of 1
City: Englewood; State: CO; Zip Code: 80209	Site Contact: N. Hanrahan; Lab Contact: S. Rothmeyer		
Project Name and Location (State): Valmont - Boulder, CO	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: 10025968			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	6010C/6020A - See list	Anions (Cl, Fl, SO4), pH	2540C-TDS	Ra226/228	TSS	Special Instructions/ Conditions of Receipt
MW-4	8/14/18	1100		X			X		X				X	X	X	X	X	Total Metals List: B, Ca, As, Ba, Be, Cd, Cr,
MW-6	8/13/18	1105		X			X		X				X	X	X	X	X	Co, Pb, Li, Mo, Se

280-113249 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	8/16/2018	10:05AM	1. Received By: [signature]	8/16/18	1005
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Temps: 0.1, 1.1, 0.3 IR5 CF+0.4 Transfer by [initials] 8/16/18

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451481.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113249-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/12/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-4 (280-113249-1)	8/14/18	11:00 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	8-17-2018 1508	TALDen		8-18-18 0835	TASL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451480.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113249-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 9/10/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

S14

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-4 (280-113249-1)	8/14/18	11:00 Mountain		Water			X	X	1	Use Collision Cell
MW-6 (280-113249-2)	8/13/18	11:05 Mountain		Water			X		1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-17-2018 1538	TALDen	Pat Mamen	8/18 9:45	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: P.M.

Cooler Received on 8/18 Opened on 8/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0** °C) Observed Cooler Temp. 16.6 °C Corrected Cooler Temp. 16.6 °C
   IR GUN #36 (CF **-0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

pH Strip Lot# **HC849161**

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

_____

_____

_____

_____

_____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113249-1

Login Number: 113249
List Number: 1
Creator: Lujan, Jacob P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	False	Refer to Job Narrative for details.
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113249-1

Login Number: 113249
List Number: 3
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 08/18/18 04:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113249-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-113249-1	MW-4	81.4
LCS 160-384214/1-A	Lab Control Sample	101
LCSD 160-384214/2-A	Lab Control Sample Dup	96.8
MB 160-384214/11-A	Method Blank	101

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-113249-1	MW-4	81.4	90.8
LCS 160-384220/1-A	Lab Control Sample	101	89.7
LCSD 160-384220/2-A	Lab Control Sample Dup	96.8	90.1
MB 160-384220/11-A	Method Blank	101	97.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-112907-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
9/11/2018 2:12:30 PM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-112907-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-112907-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 8/6/2018 at 2:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

TOTAL RECOVERABLE METALS
Sample MW-3 (280-112907-1) was analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/09/2018 and analyzed on 08/14/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Sample MW-3 (280-112907-1) was analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/09/2018 and analyzed on 08/10/2018 and 08/13/2018.

Chromium was detected in method blank MB 240-340195/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Sample MW-3 (280-112907-1)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The CCB contained Chromium above the reporting limit (RL). None of the associated samples contained the analyte above the requested reporting limit; therefore, re-extraction and/or re-analysis of samples were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Sample MW-3 (280-112907-1) was analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Sample MW-3 (280-112907-1) was analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/07/2018.

Job ID: 280-112907-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-112931-1. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Sample MW-3 (280-112907-1) was analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/08/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Sample MW-3 (280-112907-1) was analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/15/2018.

Samples MW-3 (280-112907-1)[2X] and MW-3 (280-112907-1)[20X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Sample MW-3 (280-112907-1) was analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/09/2018 and analyzed on 09/01/2018.

Radium-226 was detected in method blank MB 160-381216/14-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-381216.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228
Sample MW-3 (280-112907-1) was analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/09/2018 and analyzed on 08/15/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-381222.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)
Sample MW-3 (280-112907-1) was analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/11/2018.

Combined Radium 226 + 228 exceeded the RPD limit for the duplicate of sample 400-157681-7. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Client Sample ID: MW-3

Lab Sample ID: 280-112907-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.6		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.012		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	600		2.0	1.2	mg/L	2		6020A	Total Recoverable
Cadmium	0.00026	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00075	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0018	J B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0054	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0018	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.088		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	50		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	2300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3900		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-112907-1	MW-3	Water	08/02/18 12:00	08/06/18 14:30

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.6**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 03:18	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 21:20	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 21:20	1
Barium	**0.012**		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 21:20	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 21:20	1
Calcium	**600**		2.0	1.2	mg/L		08/09/18 15:00	08/13/18 21:00	2
Cadmium	**0.00026**	**J**	0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 21:20	1
Cobalt	**0.00075**	**J**	0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 21:20	1
Chromium	**0.0018**	**J B ^**	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 21:20	1
Molybdenum	**0.0054**	**J**	0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 21:20	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 21:20	1
Selenium	**0.0018**	**J**	0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 21:20	1
Lithium	**0.088**		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 21:20	1
Titanium	ND		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 21:20	1

General Chemistry

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.2**	**HF**	0.1	0.1	SU			08/08/18 18:46	1
Temperature	**19.8**	**HF**	1.0	1.0	Degrees C			08/08/18 18:46	1
Chloride	**50**		6.0	0.51	mg/L			08/15/18 23:34	2
Fluoride	ND		1.0	0.12	mg/L			08/15/18 23:34	2
Sulfate	**2300**		100	4.6	mg/L			08/15/18 23:56	20
Total Dissolved Solids (TDS)	**3900**		40	19	mg/L			08/07/18 12:52	1
Total Suspended Solids	**2.8**	**J**	4.0	1.1	mg/L			08/07/18 15:13	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.429**		0.105	0.112	1.00	0.0734	pCi/L	08/09/18 08:29	09/01/18 14:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:34*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.634**		0.278	0.284	1.00	0.400	pCi/L	08/09/18 09:22	08/15/18 08:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:56*	*1*
Y Carrier	*81.5*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:56*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-3
Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.06**		0.297	0.305	5.00	0.400	pCi/L		09/11/18 02:43	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-340195/1-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 01:51	1

Lab Sample ID: LCS 240-340195/2-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.05		mg/L		105	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-340195/1-A
Matrix: Water
Analysis Batch: 340439

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 16:57	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 16:57	1
Barium	ND		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 16:57	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 16:57	1
Calcium	ND		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 16:57	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 16:57	1
Cobalt	ND		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 16:57	1
Chromium	0.00164	J	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 16:57	1
Molybdenum	ND		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 16:57	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 16:57	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 16:57	1
Lithium	ND		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 16:57	1
Titanium	ND		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 16:57	1

Lab Sample ID: LCS 240-340195/3-A
Matrix: Water
Analysis Batch: 340439

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0985		mg/L		98	80 - 120
Arsenic	1.00	0.967		mg/L		97	80 - 120
Barium	1.00	0.987		mg/L		99	80 - 120
Beryllium	1.00	0.930		mg/L		93	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Cadmium	1.00	0.987		mg/L		99	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Molybdenum	0.100	0.0945		mg/L		94	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	0.960		mg/L		96	80 - 120
Lithium	0.100	0.0916		mg/L		92	80 - 120
Titanium	0.100	0.0959		mg/L		96	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-425596/4
Matrix: Water
Analysis Batch: 425596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-426233/6
Matrix: Water
Analysis Batch: 426233

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/15/18 14:59	1
Fluoride	ND		0.50	0.060	mg/L			08/15/18 14:59	1
Sulfate	ND		5.0	0.23	mg/L			08/15/18 14:59	1

Lab Sample ID: LCS 280-426233/4
Matrix: Water
Analysis Batch: 426233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	5.30		mg/L		106	90 - 110
Sulfate	100	103		mg/L		103	90 - 110

Lab Sample ID: LCSD 280-426233/5
Matrix: Water
Analysis Batch: 426233

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	5.26		mg/L		105	90 - 110	1	10
Sulfate	100	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-426233/3
Matrix: Water
Analysis Batch: 426233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.63	J	mg/L		105	50 - 150
Fluoride	0.200	0.187	J	mg/L		94	50 - 150
Sulfate	2.50	2.53	J	mg/L		101	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-425194/1
Matrix: Water
Analysis Batch: 425194

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/07/18 12:52	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-425194/2
Matrix: Water
Analysis Batch: 425194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	498		mg/L		99	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-425228/1
Matrix: Water
Analysis Batch: 425228

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/07/18 15:13	1

Lab Sample ID: LCS 280-425228/2
Matrix: Water
Analysis Batch: 425228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	90.0		mg/L		90	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-381216/14-A
Matrix: Water
Analysis Batch: 386822

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381216

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1737		0.0728	0.0745	1.00	0.0733	pCi/L	08/09/18 08:29	09/01/18 14:35	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:35*	*1*

Lab Sample ID: LCS 160-381216/1-A
Matrix: Water
Analysis Batch: 386821

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381216

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.86		1.11	1.00	0.0756	pCi/L	96	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.7*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-381216/2-A
Matrix: Water
Analysis Batch: 386821

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 381216

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.13		1.04	1.00	0.0716	pCi/L	89	68 - 137	0.34	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-381222/14-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381222

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.07153	U	0.195	0.195	1.00	0.338	pCi/L	08/09/18 09:22	08/15/18 08:57	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:57*	*1*
Y Carrier	*87.9*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:57*	*1*

Lab Sample ID: LCS 160-381222/1-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381222

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	13.19		1.44	1.00	0.372	pCi/L	119	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.7*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Lab Sample ID: LCSD 160-381222/2-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 381222

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	13.07		1.44	1.00	0.376	pCi/L	118	56 - 140	0.04	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.6*		*40 - 110*
Y Carrier	*81.9*		*40 - 110*

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Metals

Prep Batch: 340195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total Recoverable	Water	3005A	
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-340195/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-340195/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 340439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total Recoverable	Water	6020A	340195
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	6020A	340195
LCS 240-340195/3-A	Lab Control Sample	Total Recoverable	Water	6020A	340195

Analysis Batch: 340617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total Recoverable	Water	6010C	340195
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	6010C	340195
LCS 240-340195/2-A	Lab Control Sample	Total Recoverable	Water	6010C	340195

Analysis Batch: 340754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total Recoverable	Water	6020A	340195

General Chemistry

Analysis Batch: 425194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	SM 2540C	
MB 280-425194/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-425194/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 425228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	SM 2540D	
MB 280-425228/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-425228/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 425596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	9040B	
LCS 280-425596/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 426233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	9056A	
280-112907-1	MW-3	Total/NA	Water	9056A	
MB 280-426233/6	Method Blank	Total/NA	Water	9056A	
LCS 280-426233/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-426233/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-426233/3	Lab Control Sample	Total/NA	Water	9056A	

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Rad

Prep Batch: 381216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	PrecSep-21	
MB 160-381216/14-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-381216/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-381216/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 381222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112907-1	MW-3	Total/NA	Water	PrecSep_0	
MB 160-381222/14-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-381222/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-381222/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Client Sample ID: MW-3

Date Collected: 08/02/18 12:00
Date Received: 08/06/18 14:30

Lab Sample ID: 280-112907-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 03:18	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 21:20	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			340754	08/13/18 21:00	DSH	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 18:46	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	426233	08/15/18 23:34	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	426233	08/15/18 23:56	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.23 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386822	09/01/18 14:34	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.23 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:56	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-112907-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18 *
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-72796-24242.1
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:
City: Englewood	TAT Requested (days): Standard
State, Zip: CO, 80112	
Phone: 734-263-7138(Tel)	PO #: DEN-018
Email: anna.lundin@hdrinc.com	WO #:
Project Name: Xcel Energy ~~Cherokee Stete Sampling~~ Valmont CCR	Project #: ~~28014371~~ 10025968
Site: Colorado	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other: List (Tot. Metals): B, Ca, Sb, As, Ba, Be, Cd, Cr Co, Pb, Li, Mo, Se, Ti

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd - Total Dissolved Solids (TDS)	6020A, 7470A	9040B, 9056A_28D	6010C/6020A Tot. Metals - see list	9056A - Anions, pH	TDS/TSS	Ra 226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	D	N	N	D		
MW-3	8/2/18	1200	G	W	N	N				X	X	X	X	5	

280-112907 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 8/6/18 1425	Company HDR	Received by:	Date/Time: 8/6/18 1430	Company TA Denver
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.5, +0.0, FRS, xfered by Alle 8:6:18

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:
City: Englewood	TAT Requested (days): Standard
State, Zip: CO, 80112	
Phone: 720-633-2380(Tel)	PO #: DEN-001
Email: anna.lundin@hdrinc.com	WO #:
Project Name: Xcel Energy GW CCR Monitoring ~~Cherokee~~ Valmont	Project #: ~~28014371~~ 10025968
Site: Colorado	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other: List (Diss. Metals)

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Dissolved Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	6010C/6020A - Diss. Metals - see list								Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	D	N	N	D	D								X	B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Ti
~~MW-7~~ MW-3	8/2/18	1200	G	Water	Y	N						X								1	
MW-8				Water		N															
MW-9				Water		N															
MW-10				Water		N															
MW-13				Water		N															
Field Duplicate				Water		N															
Equipment Blank				Water		N															

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 8/6/18 1425	Company: HDR	Received by:	Date/Time: 8/6/18 1430	Company: TA Denver
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450228.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112907-1
Address: 4101 Shuffel Street NW, .	Due Date Requested: 8/28/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-3 (280-112907-1)	8/2/18	12:00 Mountain		Water			X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Diana Castro	8-7-18 1510	TALDen			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450223.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112907-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/30/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wasteloil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-3 (280-112907-1)	8/2/18	12:00 Mountain		Water			X	X	X	2	

Ref:
Dep:
Date: 07Aug18
Wgt: 63.20 LBS
DV: 0.00
Svcs: PRIORITY OVERNIGHT
TRCK: 4467 6846 8543
SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-7-2018 1544	TAL Den			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450223.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112907-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/30/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-3 (280-112907-1)	8/2/18	12:00 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-7-2018 1544	TAL Den	[signature]	8/8/18 0900	TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450228.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112907-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/28/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

S9

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-3 (280-112907-1)	8/2/18	12:00 Mountain		Water			X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laura Castro	8-7-18 1510	TALDen	[illegible]	8-8-18 915	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name —

Cooler unpacked by: BOT

Cooler Received on 8-8-18 Opened on 8-8-18

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0** °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
   IR GUN #36 (CF **-0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-112907-1

Login Number: 112907
List Number: 1
Creator: Gomez, Alyssa I

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-112907-1

Login Number: 112907
List Number: 2
Creator: Carter, Kevin M

List Source: TestAmerica St. Louis
List Creation: 08/08/18 12:43 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112907-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-112907-1	MW-3	97.6
LCS 160-381216/1-A	Lab Control Sample	94.7
LCSD 160-381216/2-A	Lab Control Sample Dup	95.6
MB 160-381216/14-A	Method Blank	101

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-112907-1	MW-3	97.6	81.5
LCS 160-381222/1-A	Lab Control Sample	94.7	84.9
LCSD 160-381222/2-A	Lab Control Sample Dup	95.6	81.9
MB 160-381222/14-A	Method Blank	101	87.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-113709-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont
Revision: 1

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
11/7/2018 3:19:10 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Qualifiers

Metals

Qualifier	Qualifier Description
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.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-113709-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-113709-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Revision 1 - 11/7/2018
Revision 1 was created to remove the duplicate Metals 6010C / 6020A / 7470A results for sample MW-17 (280-113709-1).

RECEIPT
The samples were received on 8/28/2018 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.9º C and 1.5º C.

TOTAL RECOVERABLE METALS
Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/04/2018 and analyzed on 09/10/2018 and 09/15/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/04/2018 and analyzed on 09/20/2018.

Chromium was detected in method blank MB 240-343748/1-A at a level exceeding the reporting limit. This compound is considered a common laboratory contaminant. The associated samples were not re-extracted and/or re-analyzed because the concentration of the common lab contaminant in the method blank was less than 2 times the RL, and the SOP allows for Chromium up to 2 time the RL in the method blank. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY
Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5)

Job ID: 280-113709-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

and MW-20 (280-113709-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 09/04/2018 and analyzed on 09/05/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/30/2018 and 08/31/2018.

Total Dissolved Solids (TDS) was detected in method blank MB 280-428128/1 at a level greater than half the reporting limit. Associated sample(s) were not re-analyzed because results were greater than 10X the value found in the method blank. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/29/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/06/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/15/2018, 09/17/2018 and 09/18/2018.

Chloride was detected in method blank MB 280-429752/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chloride and Sulfate failed the recovery criteria low for the MSD of sample 280-113857-6 in batch 280-429752. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. Refer to the QC report for details.

The presence of the '4' qualifier in batch 280-429855 indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

Sample MW-19 (280-113709-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/04/2018 and analyzed on 09/26/2018.

Job ID: 280-113709-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Sample aliquot for MW-17D (280-113709-2) was reduced due to potential matrix interference. Sample was murky, contained floating white particulates, and had a strong odor.

Sample aliquot for MW-19 (280-113709-5) was reduced due to potential matrix interference. Sample was black, opaque, and contained heavy sediment levels.

Radium-226 was detected in method blank MB 160-386896/23-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/04/2018 and analyzed on 09/11/2018.

Sample aliquot for MW-17D (280-113709-2) was reduced due to potential matrix interference. Sample was murky, contained floating white particulates, and had a strong odor.

Sample aliquot for MW-19 (280-113709-5) was reduced due to potential matrix interference. Sample was black, opaque, and contained heavy sediment levels.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-17 (280-113709-1), MW-17D (280-113709-2), MW-17EB (280-113709-3), MW-18 (280-113709-4), MW-19 (280-113709-5) and MW-20 (280-113709-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/28/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-17 — Lab Sample ID: 280-113709-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.48		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.13		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00032	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00090	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0036	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0086	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00065	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.0093		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	47		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	71	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	19		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	350		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	7.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17D — Lab Sample ID: 280-113709-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.48		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.13		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00082	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0037	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0085	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00045	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.0090		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	48		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	71	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	19		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	360		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17EB — Lab Sample ID: 280-113709-3

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-17EB (Continued) — Lab Sample ID: 280-113709-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0023	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.81	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.64	J	5.0	0.23	mg/L	1		9056A	Total/NA

Client Sample ID: MW-18 — Lab Sample ID: 280-113709-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.37		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.0011	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0016	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.040		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00073	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.011	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.030		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0013	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.041		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	39		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	28	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	200		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	680		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	14		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-19 — Lab Sample ID: 280-113709-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.8		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.0037		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.018		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.39		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0025		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00051	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.024		0.0010	0.00019	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-19 (Continued) — Lab Sample ID: 280-113709-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.14	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.081		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.045		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00055	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.16		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	140		1.0	0.58	mg/L	1		6020A	Total Recoverable
Mercury	0.15	J	0.20	0.13	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	32	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	890		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1700		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	49		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 280-113709-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.50		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.017		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0032	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.023		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.028		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	53		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	72	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	660	B	10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113709-1	MW-17	Water	08/27/18 13:25	08/28/18 10:35
280-113709-2	MW-17D	Water	08/27/18 13:25	08/28/18 10:35
280-113709-3	MW-17EB	Water	08/27/18 14:00	08/28/18 10:35
280-113709-4	MW-18	Water	08/27/18 11:45	08/28/18 10:35
280-113709-5	MW-19	Water	08/28/18 09:00	08/28/18 10:35
280-113709-6	MW-20	Water	08/27/18 15:40	08/28/18 10:35

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.48**		0.10	0.023	mg/L		09/04/18 14:00	09/10/18 23:34	1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.48**		0.10	0.023	mg/L		09/04/18 14:00	09/10/18 23:38	1

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/04/18 14:00	09/15/18 08:46	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.37**		0.10	0.023	mg/L		09/04/18 14:00	09/15/18 08:55	1

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.8**		0.10	0.023	mg/L		09/04/18 14:00	09/10/18 23:52	1

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.50**		0.10	0.023	mg/L		09/04/18 14:00	09/10/18 23:57	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 00:58	1
Arsenic	ND		0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 00:58	1
Barium	**0.13**		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 00:58	1
Beryllium	**0.00032**	**J**	0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 00:58	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 00:58	1
Cobalt	**0.00090**	**J**	0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 00:58	1
Chromium	**0.0036**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 00:58	1
Molybdenum	**0.0086**	**J**	0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 00:58	1
Lead	**0.00065**	**J**	0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 00:58	1
Selenium	ND		0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 00:58	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 00:58	1
Lithium	**0.0093**		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 00:58	1
Calcium	**47**		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 00:58	1

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 01:02	1
Arsenic	ND		0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 01:02	1
Barium	**0.13**		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 01:02	1
Beryllium	ND		0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 01:02	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 01:02	1
Cobalt	**0.00082**	**J**	0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 01:02	1
Chromium	**0.0037**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 01:02	1
Molybdenum	**0.0085**	**J**	0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 01:02	1
Lead	**0.00045**	**J**	0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 01:02	1
Selenium	ND		0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 01:02	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 01:02	1
Lithium	**0.0090**		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 01:02	1
Calcium	**48**		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 01:02	1

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 01:11	1
Arsenic	ND		0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 01:11	1
Barium	ND		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 01:11	1
Beryllium	ND		0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 01:11	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 01:11	1
Cobalt	ND		0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 01:11	1
Chromium	**0.0023**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 01:11	1
Molybdenum	ND		0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 01:11	1
Lead	ND		0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 01:11	1
Selenium	ND		0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 01:11	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 01:11	1
Lithium	ND		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 01:11	1
Calcium	ND		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 01:11	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0011**	**J**	0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 01:21	1
Arsenic	**0.0016**	**J**	0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 01:21	1
Barium	**0.040**		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 01:21	1
Beryllium	ND		0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 01:21	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 01:21	1
Cobalt	**0.00073**	**J**	0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 01:21	1
Chromium	**0.011**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 01:21	1
Molybdenum	**0.030**		0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 01:21	1
Lead	ND		0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 01:21	1
Selenium	**0.0013**	**J**	0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 01:21	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 01:21	1
Lithium	**0.041**		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 01:21	1
Calcium	**39**		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 01:21	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0037**		0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 01:30	1
Arsenic	**0.018**		0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 01:30	1
Barium	**0.39**		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 01:30	1
Beryllium	**0.0025**		0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 01:30	1
Cadmium	**0.00051**	**J**	0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 01:30	1
Cobalt	**0.024**		0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 01:30	1
Chromium	**0.14**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 01:30	1
Molybdenum	**0.081**		0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 01:30	1
Lead	**0.045**		0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 01:30	1
Selenium	**0.012**		0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 01:30	1
Thallium	**0.00055**	**J**	0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 01:30	1
Lithium	**0.16**		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 01:30	1
Calcium	**140**		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 01:30	1

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/04/18 14:00	09/20/18 01:44	1
Arsenic	ND		0.0050	0.00075	mg/L		09/04/18 14:00	09/20/18 01:44	1
Barium	**0.017**		0.0050	0.0022	mg/L		09/04/18 14:00	09/20/18 01:44	1
Beryllium	ND		0.0010	0.00031	mg/L		09/04/18 14:00	09/20/18 01:44	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/20/18 01:44	1
Cobalt	ND		0.0010	0.00019	mg/L		09/04/18 14:00	09/20/18 01:44	1
Chromium	**0.0032**	**B**	0.0020	0.00098	mg/L		09/04/18 14:00	09/20/18 01:44	1
Molybdenum	**0.023**		0.010	0.0011	mg/L		09/04/18 14:00	09/20/18 01:44	1
Lead	ND		0.0010	0.00045	mg/L		09/04/18 14:00	09/20/18 01:44	1
Selenium	ND		0.0050	0.00089	mg/L		09/04/18 14:00	09/20/18 01:44	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/20/18 01:44	1
Lithium	**0.028**		0.0080	0.0017	mg/L		09/04/18 14:00	09/20/18 01:44	1
Calcium	**53**		1.0	0.58	mg/L		09/04/18 14:00	09/20/18 01:44	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:16	1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:18	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:22	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:26	1

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.15**	**J**	0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:34	1

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:36	1

General Chemistry

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.9**	**HF**	0.1	0.1	SU			09/06/18 17:19	1
Temperature	**18.9**	**HF**	1.0	1.0	Degrees C			09/06/18 17:19	1
Chloride	**71**	**B**	3.0	0.25	mg/L			09/15/18 04:33	1
Fluoride	**1.2**		0.50	0.060	mg/L			09/17/18 21:35	1
Sulfate	**19**		5.0	0.23	mg/L			09/15/18 04:33	1
Total Dissolved Solids (TDS)	**350**		10	4.7	mg/L			08/31/18 18:57	1
Total Suspended Solids	**7.6**		4.0	1.1	mg/L			08/29/18 15:57	1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.9**	**HF**	0.1	0.1	SU			09/06/18 17:27	1
Temperature	**19.0**	**HF**	1.0	1.0	Degrees C			09/06/18 17:27	1
Chloride	**71**	**B**	3.0	0.25	mg/L			09/15/18 04:50	1
Fluoride	**1.2**		0.50	0.060	mg/L			09/17/18 23:49	1
Sulfate	**19**		5.0	0.23	mg/L			09/15/18 04:50	1
Total Dissolved Solids (TDS)	**360**		10	4.7	mg/L			08/31/18 18:57	1
Total Suspended Solids	**6.4**		4.0	1.1	mg/L			08/29/18 15:57	1

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**6.6**	**HF**	0.1	0.1	SU			09/06/18 17:23	1

General Chemistry (Continued)

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	18.7	HF	1.0	1.0	Degrees C			09/06/18 17:23	1
Chloride	0.81	J B	3.0	0.25	mg/L			09/15/18 05:07	1
Fluoride	ND		0.50	0.060	mg/L			09/18/18 00:11	1
Sulfate	0.64	J	5.0	0.23	mg/L			09/15/18 05:07	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/31/18 18:57	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/29/18 15:57	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			09/06/18 17:06	1
Temperature	19.3	HF	1.0	1.0	Degrees C			09/06/18 17:06	1
Chloride	28	B	3.0	0.25	mg/L			09/15/18 05:58	1
Fluoride	2.5		0.50	0.060	mg/L			09/18/18 00:33	1
Sulfate	200		5.0	0.23	mg/L			09/18/18 00:33	1
Total Dissolved Solids (TDS)	680		10	4.7	mg/L			08/31/18 18:57	1
Total Suspended Solids	14		4.0	1.1	mg/L			08/29/18 15:57	1

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			09/06/18 17:10	1
Temperature	19.5	HF	1.0	1.0	Degrees C			09/06/18 17:10	1
Chloride	32	B	3.0	0.25	mg/L			09/15/18 06:15	1
Fluoride	1.2		0.50	0.060	mg/L			09/18/18 01:18	1
Sulfate	890		50	2.3	mg/L			09/18/18 01:40	10
Total Dissolved Solids (TDS)	1700		20	9.4	mg/L			08/31/18 18:57	1
Total Suspended Solids	49		4.0	1.1	mg/L			08/29/18 15:57	1

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			09/06/18 17:14	1
Temperature	19.2	HF	1.0	1.0	Degrees C			09/06/18 17:14	1
Chloride	72	B	3.0	0.25	mg/L			09/15/18 06:32	1
Fluoride	2.5		0.50	0.060	mg/L			09/18/18 02:02	1
Sulfate	180		5.0	0.23	mg/L			09/15/18 06:32	1
Total Dissolved Solids (TDS)	660	B	10	4.7	mg/L			08/30/18 13:09	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/29/18 15:57	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.304		0.0906	0.0946	1.00	0.0668	pCi/L	09/04/18 10:50	09/26/18 10:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	09/04/18 10:50	09/26/18 10:00	1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.480		0.135	0.142	1.00	0.104	pCi/L	09/04/18 10:50	09/26/18 10:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	09/04/18 10:50	09/26/18 10:00	1

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.134		0.0667	0.0678	1.00	0.0746	pCi/L	09/04/18 10:50	09/26/18 10:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	09/04/18 10:50	09/26/18 10:00	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.287		0.0910	0.0946	1.00	0.0727	pCi/L	09/04/18 10:50	09/26/18 10:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	09/04/18 10:50	09/26/18 10:00	1

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.664		0.201	0.210	1.00	0.179	pCi/L	09/04/18 10:50	09/26/18 10:01	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110	09/04/18 10:50	09/26/18 10:01	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.230		0.0821	0.0846	1.00	0.0755	pCi/L	09/04/18 10:50	09/26/18 10:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*09/04/18 10:50*	*09/26/18 10:01*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.241	U	0.201	0.202	1.00	0.319	pCi/L	09/04/18 11:37	09/11/18 16:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*
Y Carrier	*86.4*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.113	U	0.258	0.258	1.00	0.444	pCi/L	09/04/18 11:37	09/11/18 16:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*
Y Carrier	*88.2*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0353	U	0.203	0.203	1.00	0.371	pCi/L	09/04/18 11:37	09/11/18 16:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*
Y Carrier	*84.5*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.355**		0.228	0.230	1.00	0.348	pCi/L	09/04/18 11:37	09/11/18 16:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*
Y Carrier	*86.4*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:46*	*1*

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.196	U	0.394	0.395	1.00	0.677	pCi/L	09/04/18 11:37	09/11/18 16:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:47*	*1*
Y Carrier	*86.4*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:47*	*1*

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.179	U	0.184	0.185	1.00	0.300	pCi/L	09/04/18 11:37	09/11/18 16:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:47*	*1*
Y Carrier	*86.4*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:47*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.545**		0.220	0.223	5.00	0.319	pCi/L		09/28/18 10:58	1

Client Sample ID: MW-17D
Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.593**		0.291	0.294	5.00	0.444	pCi/L		09/28/18 10:58	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17EB
Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0987	U	0.214	0.214	5.00	0.371	pCi/L		09/28/18 10:58	1

Client Sample ID: MW-18
Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.642**		0.245	0.249	5.00	0.348	pCi/L		09/28/18 10:58	1

Client Sample ID: MW-19
Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.860**		0.442	0.447	5.00	0.677	pCi/L		09/28/18 10:58	1

Client Sample ID: MW-20
Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.409**		0.201	0.203	5.00	0.300	pCi/L		09/28/18 10:58	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-343748/1-A
Matrix: Water
Analysis Batch: 344627

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 343748

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/04/18 14:00	09/10/18 22:58	1

Lab Sample ID: LCS 240-343748/2-A
Matrix: Water
Analysis Batch: 344627

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 343748

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.04		mg/L		104	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-343748/1-A
Matrix: Water
Analysis Batch: 346311

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 343748

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/04/18 14:00	09/19/18 23:58	1
Arsenic	ND		0.0050	0.00075	mg/L		09/04/18 14:00	09/19/18 23:58	1
Barium	ND		0.0050	0.0022	mg/L		09/04/18 14:00	09/19/18 23:58	1
Beryllium	ND		0.0010	0.00031	mg/L		09/04/18 14:00	09/19/18 23:58	1
Cadmium	ND		0.0010	0.00021	mg/L		09/04/18 14:00	09/19/18 23:58	1
Cobalt	ND		0.0010	0.00019	mg/L		09/04/18 14:00	09/19/18 23:58	1
Chromium	0.00201		0.0020	0.00098	mg/L		09/04/18 14:00	09/19/18 23:58	1
Molybdenum	ND		0.010	0.0011	mg/L		09/04/18 14:00	09/19/18 23:58	1
Lead	ND		0.0010	0.00045	mg/L		09/04/18 14:00	09/19/18 23:58	1
Selenium	ND		0.0050	0.00089	mg/L		09/04/18 14:00	09/19/18 23:58	1
Thallium	ND		0.0010	0.00020	mg/L		09/04/18 14:00	09/19/18 23:58	1
Lithium	ND		0.0080	0.0017	mg/L		09/04/18 14:00	09/19/18 23:58	1
Calcium	ND		1.0	0.58	mg/L		09/04/18 14:00	09/19/18 23:58	1

Lab Sample ID: LCS 240-343748/3-A
Matrix: Water
Analysis Batch: 346311

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 343748

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0983		mg/L		98	80 - 120
Arsenic	1.00	1.11		mg/L		111	80 - 120
Barium	1.00	0.990		mg/L		99	80 - 120
Beryllium	1.00	0.970		mg/L		97	80 - 120
Cadmium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	1.11		mg/L		111	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Molybdenum	0.100	0.0970		mg/L		97	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Thallium	0.250	0.254		mg/L		102	80 - 120
Lithium	0.100	0.103		mg/L		103	80 - 120
Calcium	10.0	9.91		mg/L		99	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-343751/1-A
Matrix: Water
Analysis Batch: 343977

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 343751

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/04/18 14:00	09/05/18 12:01	1

Lab Sample ID: LCS 240-343751/2-A
Matrix: Water
Analysis Batch: 343977

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343751

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.85		ug/L		97	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-428861/4
Matrix: Water
Analysis Batch: 428861

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-429752/6
Matrix: Water
Analysis Batch: 429752

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.608	J	3.0	0.25	mg/L			09/14/18 19:27	1
Fluoride	ND		0.50	0.060	mg/L			09/14/18 19:27	1
Sulfate	ND		5.0	0.23	mg/L			09/14/18 19:27	1

Lab Sample ID: LCS 280-429752/4
Matrix: Water
Analysis Batch: 429752

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.4		mg/L		99	90 - 110
Fluoride	5.00	5.31		mg/L		106	90 - 110
Sulfate	100	98.4		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-429752/5
Matrix: Water
Analysis Batch: 429752

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.6		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.37		mg/L		107	90 - 110	1	10
Sulfate	100	98.5		mg/L		99	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-429752/3
Matrix: Water
Analysis Batch: 429752

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.43	J	mg/L		97	50 - 150
Fluoride	0.200	0.250	J	mg/L		125	50 - 150
Sulfate	2.50	2.38	J	mg/L		95	50 - 150

Lab Sample ID: MB 280-429855/6
Matrix: Water
Analysis Batch: 429855

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/17/18 12:13	1
Fluoride	ND		0.50	0.060	mg/L			09/17/18 12:13	1
Sulfate	ND		5.0	0.23	mg/L			09/17/18 12:13	1

Lab Sample ID: LCS 280-429855/4
Matrix: Water
Analysis Batch: 429855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.04		mg/L		101	90 - 110
Sulfate	100	99.7		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-429855/5
Matrix: Water
Analysis Batch: 429855

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	100		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.05		mg/L		101	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-429855/3
Matrix: Water
Analysis Batch: 429855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.54	J	mg/L		101	50 - 150
Fluoride	0.200	0.121	J	mg/L		61	50 - 150
Sulfate	2.50	2.58	J	mg/L		103	50 - 150

Lab Sample ID: 280-113709-1 MS
Matrix: Water
Analysis Batch: 429855

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	73		25.0	101		mg/L		112	80 - 120
Fluoride	1.2		5.00	6.22		mg/L		101	80 - 120
Sulfate	21		25.0	48.9		mg/L		110	80 - 120

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 280-113709-1 MSD — **Client Sample ID: MW-17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429855

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	73		25.0	102		mg/L		115	80 - 120	1	20
Fluoride	1.2		5.00	6.39		mg/L		104	80 - 120	3	20
Sulfate	21		25.0	49.7		mg/L		113	80 - 120	2	20

Lab Sample ID: 280-113709-6 MS — **Client Sample ID: MW-20**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429855

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	74		25.0	103		mg/L		116	80 - 120
Fluoride	2.5		5.00	7.56		mg/L		102	80 - 120
Sulfate	170		25.0	197	4	mg/L		118	80 - 120

Lab Sample ID: 280-113709-6 MSD — **Client Sample ID: MW-20**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429855

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	74		25.0	103		mg/L		116	80 - 120	0	20
Fluoride	2.5		5.00	7.60		mg/L		103	80 - 120	1	20
Sulfate	170		25.0	197	4	mg/L		118	80 - 120	0	20

Lab Sample ID: 280-113709-1 DU — **Client Sample ID: MW-17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429855

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	73		72.9		mg/L		0	15
Fluoride	1.2		1.17		mg/L		0.2	15
Sulfate	21		21.7		mg/L		0.8	15

Lab Sample ID: 280-113709-6 DU — **Client Sample ID: MW-20**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429855

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	74		74.1		mg/L		0.07	15
Fluoride	2.5		2.49		mg/L		0.5	15
Sulfate	170		168		mg/L		0.1	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-428128/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	7.00	J	10	4.7	mg/L			08/30/18 13:09	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-428128/2
Matrix: Water
Analysis Batch: 428128

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	502		mg/L		100	86 - 110

Lab Sample ID: MB 280-428321/1
Matrix: Water
Analysis Batch: 428321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/31/18 18:57	1

Lab Sample ID: LCS 280-428321/2
Matrix: Water
Analysis Batch: 428321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	496		mg/L		99	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-427994/1
Matrix: Water
Analysis Batch: 427994

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/29/18 15:57	1

Lab Sample ID: LCS 280-427994/2
Matrix: Water
Analysis Batch: 427994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	88.8		mg/L		89	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-386896/23-A
Matrix: Water
Analysis Batch: 391268

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386896

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2475		0.0882	0.0909	1.00	0.0867	pCi/L	09/04/18 10:50	09/26/18 10:03	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.2*		*40 - 110*	*09/04/18 10:50*	*09/26/18 10:03*	*1*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-386896/1-A
Matrix: Water
Analysis Batch: 391266

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386896

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.86		1.11	1.00	0.0657	pCi/L	96	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Lab Sample ID: LCSD 160-386896/2-A
Matrix: Water
Analysis Batch: 391266

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386896

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.27		1.14	1.00	0.0678	pCi/L	99	68 - 137	0.18	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*100*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-386899/23-A
Matrix: Water
Analysis Batch: 388373

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386899

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.08838	U	0.186	0.186	1.00	0.358	pCi/L	09/04/18 11:37	09/11/18 16:50	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.2*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:50*	*1*
Y Carrier	*90.5*		*40 - 110*	*09/04/18 11:37*	*09/11/18 16:50*	*1*

Lab Sample ID: LCS 160-386899/1-A
Matrix: Water
Analysis Batch: 388368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386899

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.0	12.64		1.38	1.00	0.351	pCi/L	115	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*85.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-386899/2-A
Matrix: Water
Analysis Batch: 388368

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386899

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.0	12.13		1.33	1.00	0.336	pCi/L	110	56 - 140	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*100*		*40 - 110*
Y Carrier	*88.2*		*40 - 110*

Metals

Prep Batch: 343748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total Recoverable	Water	3005A	
280-113709-2	MW-17D	Total Recoverable	Water	3005A	
280-113709-3	MW-17EB	Total Recoverable	Water	3005A	
280-113709-4	MW-18	Total Recoverable	Water	3005A	
280-113709-5	MW-19	Total Recoverable	Water	3005A	
280-113709-6	MW-20	Total Recoverable	Water	3005A	
MB 240-343748/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-343748/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-343748/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 343751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	7470A	
280-113709-2	MW-17D	Total/NA	Water	7470A	
280-113709-3	MW-17EB	Total/NA	Water	7470A	
280-113709-4	MW-18	Total/NA	Water	7470A	
280-113709-5	MW-19	Total/NA	Water	7470A	
280-113709-6	MW-20	Total/NA	Water	7470A	
MB 240-343751/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-343751/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 343977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	7470A	343751
280-113709-2	MW-17D	Total/NA	Water	7470A	343751
280-113709-3	MW-17EB	Total/NA	Water	7470A	343751
280-113709-4	MW-18	Total/NA	Water	7470A	343751
280-113709-5	MW-19	Total/NA	Water	7470A	343751
280-113709-6	MW-20	Total/NA	Water	7470A	343751
MB 240-343751/1-A	Method Blank	Total/NA	Water	7470A	343751
LCS 240-343751/2-A	Lab Control Sample	Total/NA	Water	7470A	343751

Analysis Batch: 344627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total Recoverable	Water	6010C	343748
280-113709-2	MW-17D	Total Recoverable	Water	6010C	343748
280-113709-5	MW-19	Total Recoverable	Water	6010C	343748
280-113709-6	MW-20	Total Recoverable	Water	6010C	343748
MB 240-343748/1-A	Method Blank	Total Recoverable	Water	6010C	343748
LCS 240-343748/2-A	Lab Control Sample	Total Recoverable	Water	6010C	343748

Analysis Batch: 345484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-3	MW-17EB	Total Recoverable	Water	6010C	343748
280-113709-4	MW-18	Total Recoverable	Water	6010C	343748

Analysis Batch: 346311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total Recoverable	Water	6020A	343748
280-113709-2	MW-17D	Total Recoverable	Water	6020A	343748
280-113709-3	MW-17EB	Total Recoverable	Water	6020A	343748

Metals (Continued)

Analysis Batch: 346311 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-4	MW-18	Total Recoverable	Water	6020A	343748
280-113709-5	MW-19	Total Recoverable	Water	6020A	343748
280-113709-6	MW-20	Total Recoverable	Water	6020A	343748
MB 240-343748/1-A	Method Blank	Total Recoverable	Water	6020A	343748
LCS 240-343748/3-A	Lab Control Sample	Total Recoverable	Water	6020A	343748

General Chemistry

Analysis Batch: 427994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	SM 2540D	
280-113709-2	MW-17D	Total/NA	Water	SM 2540D	
280-113709-3	MW-17EB	Total/NA	Water	SM 2540D	
280-113709-4	MW-18	Total/NA	Water	SM 2540D	
280-113709-5	MW-19	Total/NA	Water	SM 2540D	
280-113709-6	MW-20	Total/NA	Water	SM 2540D	
MB 280-427994/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-427994/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 428128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-6	MW-20	Total/NA	Water	SM 2540C	
MB 280-428128/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-428128/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 428321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	SM 2540C	
280-113709-2	MW-17D	Total/NA	Water	SM 2540C	
280-113709-3	MW-17EB	Total/NA	Water	SM 2540C	
280-113709-4	MW-18	Total/NA	Water	SM 2540C	
280-113709-5	MW-19	Total/NA	Water	SM 2540C	
MB 280-428321/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-428321/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 428861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	9040B	
280-113709-2	MW-17D	Total/NA	Water	9040B	
280-113709-3	MW-17EB	Total/NA	Water	9040B	
280-113709-4	MW-18	Total/NA	Water	9040B	
280-113709-5	MW-19	Total/NA	Water	9040B	
280-113709-6	MW-20	Total/NA	Water	9040B	
LCS 280-428861/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 429752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	9056A	
280-113709-2	MW-17D	Total/NA	Water	9056A	
280-113709-3	MW-17EB	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 429752 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-4	MW-18	Total/NA	Water	9056A	
280-113709-5	MW-19	Total/NA	Water	9056A	
280-113709-6	MW-20	Total/NA	Water	9056A	
MB 280-429752/6	Method Blank	Total/NA	Water	9056A	
LCS 280-429752/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-429752/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-429752/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 429855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	9056A	
280-113709-2	MW-17D	Total/NA	Water	9056A	
280-113709-3	MW-17EB	Total/NA	Water	9056A	
280-113709-4	MW-18	Total/NA	Water	9056A	
280-113709-5	MW-19	Total/NA	Water	9056A	
280-113709-5	MW-19	Total/NA	Water	9056A	
280-113709-6	MW-20	Total/NA	Water	9056A	
MB 280-429855/6	Method Blank	Total/NA	Water	9056A	
LCS 280-429855/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-429855/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-429855/3	Lab Control Sample	Total/NA	Water	9056A	
280-113709-1 MS	MW-17	Total/NA	Water	9056A	
280-113709-1 MSD	MW-17	Total/NA	Water	9056A	
280-113709-6 MS	MW-20	Total/NA	Water	9056A	
280-113709-6 MSD	MW-20	Total/NA	Water	9056A	
280-113709-1 DU	MW-17	Total/NA	Water	9056A	
280-113709-6 DU	MW-20	Total/NA	Water	9056A	

Rad

Prep Batch: 386896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	PrecSep-21	
280-113709-2	MW-17D	Total/NA	Water	PrecSep-21	
280-113709-3	MW-17EB	Total/NA	Water	PrecSep-21	
280-113709-4	MW-18	Total/NA	Water	PrecSep-21	
280-113709-5	MW-19	Total/NA	Water	PrecSep-21	
280-113709-6	MW-20	Total/NA	Water	PrecSep-21	
MB 160-386896/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-386896/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-386896/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 386899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113709-1	MW-17	Total/NA	Water	PrecSep_0	
280-113709-2	MW-17D	Total/NA	Water	PrecSep_0	
280-113709-3	MW-17EB	Total/NA	Water	PrecSep_0	
280-113709-4	MW-18	Total/NA	Water	PrecSep_0	
280-113709-5	MW-19	Total/NA	Water	PrecSep_0	
280-113709-6	MW-20	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 386899 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-386899/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-386899/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-386899/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-17

Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			344627	09/10/18 23:34	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 00:58	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:16	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:19	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 04:33	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/17/18 21:35	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	428321	08/31/18 18:57	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.12 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:00	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.12 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Client Sample ID: MW-17D

Date Collected: 08/27/18 13:25
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			344627	09/10/18 23:38	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 01:02	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:18	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 04:50	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/17/18 23:49	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	428321	08/31/18 18:57	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.96 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:00	MAR	TAL SL
Total/NA	Prep	PrecSep_0			749.96 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-17EB

Date Collected: 08/27/18 14:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			345484	09/15/18 08:46	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 01:11	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:22	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:23	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 05:07	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/18/18 00:11	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	428321	08/31/18 18:57	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			999.79 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:00	MAR	TAL SL
Total/NA	Prep	PrecSep_0			999.79 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Client Sample ID: MW-18

Date Collected: 08/27/18 11:45
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			345484	09/15/18 08:55	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 01:21	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:26	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:06	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 05:58	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/18/18 00:33	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	428321	08/31/18 18:57	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.30 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:00	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.30 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Client Sample ID: MW-19

Date Collected: 08/28/18 09:00
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			344627	09/10/18 23:52	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 01:30	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:34	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:10	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 06:15	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/18/18 01:18	A1D	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	429855	09/18/18 01:40	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	428321	08/31/18 18:57	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.21 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:01	MAR	TAL SL
Total/NA	Prep	PrecSep_0			500.21 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:47	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Client Sample ID: MW-20

Date Collected: 08/27/18 15:40
Date Received: 08/28/18 10:35

Lab Sample ID: 280-113709-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			344627	09/10/18 23:57	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	343748	09/04/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			346311	09/20/18 01:44	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	343751	09/04/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			343977	09/05/18 12:36	AJC	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 17:14	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429752	09/15/18 06:32	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	429855	09/18/18 02:02	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	428128	08/30/18 13:09	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427994	08/29/18 15:57	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.51 mL	1.0 g	386896	09/04/18 10:50	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 10:01	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.51 mL	1.0 g	386899	09/04/18 11:37	JLC	TAL SL
Total/NA	Analysis	9320		1			388368	09/11/18 16:47	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113709-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-113709-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
HDR, Inc	Matt Rohr	8/28/18	193255
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
9781 S Meridian Blvd Ste 400	(303) 764-1537		
City / **State** / **Zip Code**	**Site Contact** / **Lab Contact**		
Englewood / CO / 80112	Emily Muñoz (720)273 3336 / Stephanie Rothweiler		
Project Name and Location (State)	**Carrier/Waybill Number**		
Xcel - Valmont (CO)	Hand Delivery		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: Metals, total	Anions/pH	TDS/TSS	Ra 226/228
MW-17	8/27/18	1325		X			3		3				X	X	X	X
MW-17D	8/27/18	1325		X			3		3				X	X	X	X
MW-17EB	8/27/18	1400		X			3		3				X	X	X	X
MW-18	8/27/18	1145		X			3		3				X	X	X	X
MW-19	8/28/18	0900		X			3		3				X	X	X	X
MW-20	8/27/18	1540		X			3		3				X	X	X	X

Special Instructions/ Conditions of Receipt

280-113709 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other per contract

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	8/28/18	1035	1. Received By Amanda Peel TAEN	8/28/18	1035
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: Temps: 3.4°C, 1.0°C IR8 cF +0.5 transfer by 8/28/18

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client: HDR, Inc	Project Manager: Matt Rohr	Date: 8/28/18	Chain of Custody Number: 193256
Address: 9781 S. Meridian Blvd Ste 400	Telephone Number (Area Code)/Fax Number: (303) 764-1537	Lab Number:	Page 1 of 1
City: Englewood; State: CO; Zip Code: 80112	Site Contact: Emily Muñoz (720)273-3436; Lab Contact: Stephanie Rothmeyer		
Project Name and Location (State): Xcel - Valmont (CO)	Carrier/Waybill Number: Hand Delivery		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Dissolved Metals	Special Instructions/ Conditions of Receipt
MW-17	8/27/18	1325		X					1				X	Field filtered
MW-17D	8/27/18	1325		X					1				X	
MW-17EB	8/27/18	1400		X					1				X	
MW-18	8/27/18	1145		X					1				X	
MW-20	8/27/18	1540		X					1				X	
MW-19	8/28/18	0900		X					0				X	Obtain aliquot from unpreserved bottles on other COC, Lab filter + preserve.

8/28

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other per contract

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	8/28/18	1035	1. Received By: Amanda Pal TAPEN	8/28/18	1035
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: Insufficient volume from MW-19, Lab filter + preserve diss. metals aliquot from unpreserved bottles submitted under other COC (# 193255)

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Temps: 0.4°C, 1.0°C IR & cF+0.5 transfer by [signature] 8/28/18

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-452715.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113709-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/24/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Radium-226 (1/3)	9320_Ra228/PreSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-113709-1)	8/27/18	13:25 Mountain		Water			X	X	X	2	
MW-17D (280-113709-2)	8/27/18	13:25 Mountain		Water			X	X	X	2	
MW-17EB (280-113709-3)	8/27/18	14:00 Mountain		Water			X	X	X	2	
MW-18 (280-113709-4)	8/27/18	11:45 Mountain		Water			X	X	X	2	
MW-19 (280-113709-5)	8/28/18	09:00 Mountain		Water			X	X	X	2	
MW-20 (280-113709-6)	8/27/18	15:40 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Ramia Castro	8-29-18 1425	TALDen	Lacee Dysart	8/31/18 0920	TA STL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks

Ver: 09/20/2016

1.4/1.4

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-452716.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113709-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 9/20/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

S35, W10t

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-113709-1)	8/27/18	13:25 Mountain		Water			X	X	X	2	Use Collision Cell
MW-17D (280-113709-2)	8/27/18	13:25 Mountain		Water			X	X	X	2	Use Collision Cell
MW-17EB (280-113709-3)	8/27/18	14:00 Mountain		Water			X	X	X	2	Use Collision Cell
MW-18 (280-113709-4)	8/27/18	11:45 Mountain		Water			X	X	X	2	Use Collision Cell
MW-19 (280-113709-5)	8/28/18	09:00 Mountain		Water			X	X	X	2	Use Collision Cell
MW-20 (280-113709-6)	8/27/18	15:40 Mountain		Water			X	X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Laura Castro	8-29-18 1415	TAL Den		8/31/18 930	TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-452716.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113709-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 9/21/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/FIELD_FLTRD (MOD) Copy Analytes	6020A/FIELD_FLTRD (MOD) 12 Metals	7470A/FIELD_FLTRD Mercury - 2/2	6010C/FILTRATION (MOD) Copy Analytes	6020A/FILTRATION (MOD) 12 Metals	7470A/FILTRATION Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:											
MW-17 (280-113709-1)	8/27/18	13:25 Mountain		Water			X	X	X				2	
MW-17D (280-113709-2)	8/27/18	13:25 Mountain		Water			X	X	X				2	
MW-17EB (280-113709-3)	8/27/18	14:00 Mountain		Water			X	X	X				2	
MW-18 (280-113709-4)	8/27/18	11:45 Mountain		Water			X	X	X				2	
MW-19 (280-113709-5)	8/28/18	09:00 Mountain		Water						X	X	X	2	
MW-20 (280-113709-6)	8/27/18	15:40 Mountain		Water			X	X	X				2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laura Castro	8-29-18 1415	TAL		8/31/18 930	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: SV

Cooler Received on 8/31/18 Opened on 8/31/18

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
   IR GUN #36 (CF -0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC849151**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

_____

_____

_____

_____

_____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113709-1

Login Number: 113709
List Number: 1
Creator: Lujan, Jacob P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113709-1

Login Number: 113709
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/31/18 03:58 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-113709-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-113709-1	MW-17	104
280-113709-2	MW-17D	100
280-113709-3	MW-17EB	103
280-113709-4	MW-18	99.1
280-113709-5	MW-19	97.6
280-113709-6	MW-20	104
LCS 160-386896/1-A	Lab Control Sample	102
LCSD 160-386896/2-A	Lab Control Sample Dup	100
MB 160-386896/23-A	Method Blank	88.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-113709-1	MW-17	104	86.4
280-113709-2	MW-17D	100	88.2
280-113709-3	MW-17EB	103	84.5
280-113709-4	MW-18	99.1	86.4
280-113709-5	MW-19	97.6	86.4
280-113709-6	MW-20	104	86.4
LCS 160-386899/1-A	Lab Control Sample	102	85.6
LCSD 160-386899/2-A	Lab Control Sample Dup	100	88.2
MB 160-386899/23-A	Method Blank	88.2	90.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-112898-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
9/11/2018 2:00:37 PM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@testamericainc.com

Links

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.
X	Carrier is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-112898-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-112898-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 8/6/2018 at 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 0.9º C and 1.4º C.

Containers received for sample ID MW-18 had the following discrepancies: 500mL plastic for metals/mercury analysis label was received on a 1L plastic bottle. One 500mL plastic bottled received labeled for dissolved metals as 1L plastic.

Containers received for sample ID MW-19 had the following discrepancies: 1L plastic preserved bottle for total metals/mercury received with preservative label crossed out. However, lid was also marked with a green line, indicating preservative. Sample has been logged as preserved. Additionally, 5 containers were indicated for this sample on Chain of Custody, but only 4 were received. Finally, plastic 1L for Ra-226/228 was received impartially filled at 820mL.

TOTAL RECOVERABLE METALS

Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/09/2018 and analyzed on 08/14/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/09/2018 and analyzed on 08/10/2018 and 08/13/2018.

Chromium was detected in method blank MB 240-340195/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The CCB contained Chromium above the reporting limit (RL). Associated samples were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the CCB.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DISSOLVED MERCURY

Job ID: 280-112898-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4) and MW-17D (280-112898-5) were analyzed for dissolved mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 08/14/2018 and analyzed on 08/15/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 08/14/2018 and analyzed on 08/15/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/08/2018 and 08/10/2018.

The following sample failed to reach constant pH after 3 replicates: MW-17EB (280-112898-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/17/2018.

Sample MW-19 (280-112898-3)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/09/2018 and 08/14/2018 and analyzed on 09/01/2018 and 09/05/2018.

Radium-226 was detected in method blank MB 160-381216/14-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Radium-226 was detected in method blank MB 160-382133/18-A at a level that was above the method detection limit but below the

Job ID: 280-112898-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batches 160-381216 and 160-382133.

The following samples were reduced due to potential matrix interference: MW-18 (280-112898-2), MW-19 (280-112898-3).

The barium carrier recovery is outside the lower control limit for the following sample: MW-19 (280-112898-3). There was physical evidence of matrix interference apparent during the initial preparation of the sample. The QC samples associated with the batch have acceptable carrier recovery, indicating the presence of matrix interference. The pellet was noted as smaller during the into ingrowth process.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/09/2018 and 08/14/2018 and analyzed on 08/15/2018 and 08/17/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batches 160-381222 and 160-382144.

The following samples were reduced due to potential matrix interference: MW-18 (280-112898-2), MW-19 (280-112898-3).

The following sample did not meet the requested limit (RL) due to the reduced sample volume attributed to the presence of matrix interferences: MW-18 (280-112898-2).

The barium carrier recovery is outside the lower control limit for the following sample: MW-19 (280-112898-3). There was physical evidence of matrix interference apparent during the initial preparation of the sample. The QC samples associated with the batch have acceptable carrier recovery, indicating the presence of matrix interference. The pellet was noted as smaller during the into ingrowth process.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-17 (280-112898-1), MW-18 (280-112898-2), MW-19 (280-112898-3), MW-20 (280-112898-4), MW-17D (280-112898-5) and MW-17EB (280-112898-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/11/2018.

Combined Radium 226 + 228 exceeded the RPD limit for the duplicate of sample 400-157681-7. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Client Sample ID: MW-17 — Lab Sample ID: 280-112898-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.50		0.10	0.023	mg/L	1		6010C	Total Recoverable
Boron	0.48		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00065	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	46		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00068	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0076	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.0043	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Titanium	0.0068	J	0.010	0.0021	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	71		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	20		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	350		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-18 — Lab Sample ID: 280-112898-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.36		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.0012	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0052		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.11		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00084	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	44		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0058		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.050	B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.028		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0077		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0021	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.043		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-18 (Continued) — Lab Sample ID: 280-112898-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Titanium	0.21		0.010	0.0021	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	29		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.7		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	670		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	220		8.9	2.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-19 — Lab Sample ID: 280-112898-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.4		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.0038		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0084		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.21		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00096	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	58		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00036	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0084		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.048	B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.057		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.014		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0095		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.067		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Titanium	0.36		0.010	0.0021	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	32		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.8		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	520		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1200		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1700		67	18	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 280-112898-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.55		0.10	0.023	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-20 (Continued) — Lab Sample ID: 280-112898-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.016		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	48		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0018	J B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.016		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.016		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	64		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	110		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	530		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17D — Lab Sample ID: 280-112898-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.47		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	46		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00059	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0024	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0075	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.0042	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Titanium	0.0067	J	0.010	0.0021	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	71		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	20		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	360		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	11		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17EB — Lab Sample ID: 280-112898-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0017	J B ^	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-112898-1	MW-17	Ground Water	08/03/18 12:00	08/06/18 09:50
280-112898-2	MW-18	Ground Water	08/03/18 14:50	08/06/18 09:50
280-112898-3	MW-19	Water	08/03/18 15:30	08/06/18 09:50
280-112898-4	MW-20	Ground Water	08/03/18 13:00	08/06/18 09:50
280-112898-5	MW-17D	Water	08/03/18 12:10	08/06/18 09:50
280-112898-6	MW-17EB	Water	08/03/18 13:45	08/06/18 09:50

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.50**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 02:00	1
Boron	**0.48**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 02:22	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.36**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 02:27	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.4**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 02:45	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.55**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 02:55	1

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.47**		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 03:04	1

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 03:13	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 20:26	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 20:26	1
Barium	**0.12**		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 20:26	1
Beryllium	**0.00065**	**J**	0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 20:26	1
Calcium	**46**		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 20:26	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 20:26	1
Cobalt	**0.00068**	**J**	0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 20:26	1
Chromium	**0.0017**	**J B ^**	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 20:26	1
Molybdenum	**0.0076**	**J**	0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 20:26	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 20:26	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 20:26	1
Lithium	**0.0043**	**J**	0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 20:26	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Titanium	0.0068	J	0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 20:26	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0012	J	0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 20:31	1
Arsenic	0.0052		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 20:31	1
Barium	0.11		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 20:31	1
Beryllium	0.00084	J	0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 20:31	1
Calcium	44		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 20:31	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 20:31	1
Cobalt	0.0058		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 20:31	1
Chromium	0.050	B ^	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 20:31	1
Molybdenum	0.028		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 20:31	1
Lead	0.0077		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 20:31	1
Selenium	0.0021	J	0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 20:31	1
Lithium	0.043		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 20:31	1
Titanium	0.21		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 20:31	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0038		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 20:40	1
Arsenic	0.0084		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 20:40	1
Barium	0.21		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 20:40	1
Beryllium	0.00096	J	0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 20:40	1
Calcium	58		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 20:40	1
Cadmium	0.00036	J	0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 20:40	1
Cobalt	0.0084		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 20:40	1
Chromium	0.048	B ^	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 20:40	1
Molybdenum	0.057		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 20:40	1
Lead	0.014		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 20:40	1
Selenium	0.0095		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 20:40	1
Lithium	0.067		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 20:40	1
Titanium	0.36		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 20:40	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 20:57	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 20:57	1
Barium	0.016		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 20:57	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 20:57	1
Calcium	48		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 20:57	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 20:57	1
Cobalt	ND		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 20:57	1
Chromium	0.0018	J B ^	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 20:57	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.016**		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 20:57	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 20:57	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 20:57	1
Lithium	**0.016**		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 20:57	1
Titanium	ND		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 20:57	1

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 21:06	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 21:06	1
Barium	**0.12**		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 21:06	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 21:06	1
Calcium	**46**		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 21:06	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 21:06	1
Cobalt	**0.00059**	**J**	0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 21:06	1
Chromium	**0.0024**	**B**	0.0020	0.00098	mg/L		08/09/18 15:00	08/13/18 20:56	1
Molybdenum	**0.0075**	**J**	0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 21:06	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 21:06	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 21:06	1
Lithium	**0.0042**	**J**	0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 21:06	1
Titanium	**0.0067**	**J**	0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 21:06	1

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 21:15	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 21:15	1
Barium	ND		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 21:15	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 21:15	1
Calcium	ND		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 21:15	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 21:15	1
Cobalt	ND		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 21:15	1
Chromium	**0.0017**	**J B ^**	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 21:15	1
Molybdenum	ND		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 21:15	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 21:15	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 21:15	1
Lithium	ND		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 21:15	1
Titanium	ND		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 21:15	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:18	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:31	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:35	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:39	1

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:43	1

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:47	1

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:29	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:33	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:37	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:41	1

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:45	1

General Chemistry

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			08/08/18 19:15	1
Temperature	19.9	HF	1.0	1.0	Degrees C			08/08/18 19:15	1
Chloride	71		3.0	0.25	mg/L			08/17/18 03:07	1
Fluoride	1.3		0.50	0.060	mg/L			08/17/18 03:07	1
Sulfate	20		5.0	0.23	mg/L			08/17/18 03:07	1
Total Dissolved Solids (TDS)	350		10	4.7	mg/L			08/07/18 12:52	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			08/07/18 15:13	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			08/08/18 19:33	1
Temperature	20.0	HF	1.0	1.0	Degrees C			08/08/18 19:33	1
Chloride	29		3.0	0.25	mg/L			08/17/18 03:51	1
Fluoride	2.7		0.50	0.060	mg/L			08/17/18 03:51	1
Sulfate	180		5.0	0.23	mg/L			08/17/18 03:51	1
Total Dissolved Solids (TDS)	670		10	4.7	mg/L			08/07/18 12:52	1
Total Suspended Solids	220		8.9	2.5	mg/L			08/07/18 15:13	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.2	HF	0.1	0.1	SU			08/08/18 21:41	1
Temperature	20.6	HF	1.0	1.0	Degrees C			08/08/18 21:41	1
Chloride	32		3.0	0.25	mg/L			08/17/18 04:36	1
Fluoride	1.8		0.50	0.060	mg/L			08/17/18 04:36	1
Sulfate	520		50	2.3	mg/L			08/17/18 04:58	10
Total Dissolved Solids (TDS)	1200		20	9.4	mg/L			08/07/18 12:52	1
Total Suspended Solids	1700		67	18	mg/L			08/07/18 15:13	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/08/18 19:19	1
Temperature	19.7	HF	1.0	1.0	Degrees C			08/08/18 19:19	1
Chloride	64		3.0	0.25	mg/L			08/17/18 05:20	1
Fluoride	2.3		0.50	0.060	mg/L			08/17/18 05:20	1
Sulfate	110		5.0	0.23	mg/L			08/17/18 05:20	1
Total Dissolved Solids (TDS)	530		10	4.7	mg/L			08/07/18 12:52	1

General Chemistry (Continued)

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**1.6**	**J**	4.0	1.1	mg/L			08/07/18 15:13	1

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.9**	**HF**	0.1	0.1	SU			08/08/18 19:29	1
Temperature	**19.8**	**HF**	1.0	1.0	Degrees C			08/08/18 19:29	1
Chloride	**71**		3.0	0.25	mg/L			08/17/18 06:49	1
Fluoride	**1.3**		0.50	0.060	mg/L			08/17/18 06:49	1
Sulfate	**20**		5.0	0.23	mg/L			08/17/18 06:49	1
Total Dissolved Solids (TDS)	**360**		10	4.7	mg/L			08/07/18 12:52	1
Total Suspended Solids	**11**		4.0	1.1	mg/L			08/07/18 15:13	1

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**6.0**	**HF**	0.1	0.1	SU			08/10/18 17:47	1
Temperature	**18.9**	**HF**	1.0	1.0	Degrees C			08/10/18 17:47	1
Chloride	ND		3.0	0.25	mg/L			08/17/18 07:33	1
Fluoride	ND		0.50	0.060	mg/L			08/17/18 07:33	1
Sulfate	ND		5.0	0.23	mg/L			08/17/18 07:33	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/07/18 12:52	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/07/18 15:13	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.338**		0.0955	0.100	1.00	0.0653	pCi/L	08/09/18 08:29	09/01/18 14:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:40*	*1*

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.615**		0.229	0.236	1.00	0.193	pCi/L	08/09/18 08:29	09/01/18 14:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*70.8*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:40*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.84	G	1.26	1.29	1.00	1.29	pCi/L	08/14/18 13:16	09/05/18 05:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*17.7*	*X*	*40 - 110*	*08/14/18 13:16*	*09/05/18 05:58*	*1*

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.305		0.0975	0.101	1.00	0.0816	pCi/L	08/09/18 08:29	09/01/18 14:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:40*	*1*

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.255		0.0922	0.0950	1.00	0.0915	pCi/L	08/09/18 08:29	09/01/18 14:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:40*	*1*

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.224		0.0838	0.0862	1.00	0.0883	pCi/L	08/09/18 08:29	09/01/18 14:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.5*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:34*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.318	U	0.215	0.217	1.00	0.331	pCi/L	08/09/18 09:22	08/15/18 08:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:55*	*1*

Method: 9320 - Radium-228 (GFPC) (Continued)

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Y Carrier	88.6		40 - 110	08/09/18 09:22	08/15/18 08:55	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.22	G	0.752	0.761	1.00	1.16	pCi/L	08/09/18 09:22	08/15/18 08:55	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	70.8		40 - 110	08/09/18 09:22	08/15/18 08:55	1
Y Carrier	84.9		40 - 110	08/09/18 09:22	08/15/18 08:55	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	4.65	U G	4.56	4.58	1.00	7.36	pCi/L	08/14/18 14:09	08/17/18 16:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	17.7	X	40 - 110	08/14/18 14:09	08/17/18 16:00	1
Y Carrier	80.4		40 - 110	08/14/18 14:09	08/17/18 16:00	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.380		0.232	0.235	1.00	0.352	pCi/L	08/09/18 09:22	08/15/18 08:55	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110	08/09/18 09:22	08/15/18 08:55	1
Y Carrier	87.1		40 - 110	08/09/18 09:22	08/15/18 08:55	1

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.577		0.286	0.290	1.00	0.423	pCi/L	08/09/18 09:22	08/15/18 08:55	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110	08/09/18 09:22	08/15/18 08:55	1
Y Carrier	78.9		40 - 110	08/09/18 09:22	08/15/18 08:55	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.156	U	0.223	0.224	1.00	0.373	pCi/L	08/09/18 09:22	08/15/18 08:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.5*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:56*	*1*
Y Carrier	*82.2*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:56*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17
Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.656**		0.235	0.239	5.00	0.331	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-18
Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.84**		0.786	0.797	5.00	1.16	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-19
Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**7.49**	**G**	4.73	4.76	5.00	7.36	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-20
Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.684**		0.252	0.256	5.00	0.352	pCi/L		09/11/18 02:43	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17D
Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.831		0.300	0.305	5.00	0.423	pCi/L		09/11/18 02:43	1

Client Sample ID: MW-17EB
Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50
Lab Sample ID: 280-112898-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.381		0.238	0.240	5.00	0.373	pCi/L		09/11/18 02:43	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-340195/1-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/09/18 15:00	08/14/18 01:51	1

Lab Sample ID: LCS 240-340195/2-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.05		mg/L		105	80 - 120

Lab Sample ID: 280-112898-1 MS
Matrix: Ground Water
Analysis Batch: 340617

Client Sample ID: MW-17
Prep Type: Dissolved
Prep Batch: 340195

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.50		1.00	1.49		mg/L		99	75 - 125

Lab Sample ID: 280-112898-1 MSD
Matrix: Ground Water
Analysis Batch: 340617

Client Sample ID: MW-17
Prep Type: Dissolved
Prep Batch: 340195

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.50		1.00	1.51		mg/L		101	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-340195/1-A
Matrix: Water
Analysis Batch: 340439

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/09/18 15:00	08/10/18 16:57	1
Arsenic	ND		0.0050	0.00075	mg/L		08/09/18 15:00	08/10/18 16:57	1
Barium	ND		0.0050	0.0022	mg/L		08/09/18 15:00	08/10/18 16:57	1
Beryllium	ND		0.0010	0.00031	mg/L		08/09/18 15:00	08/10/18 16:57	1
Calcium	ND		1.0	0.58	mg/L		08/09/18 15:00	08/10/18 16:57	1
Cadmium	ND		0.0010	0.00021	mg/L		08/09/18 15:00	08/10/18 16:57	1
Cobalt	ND		0.0010	0.00019	mg/L		08/09/18 15:00	08/10/18 16:57	1
Chromium	0.00164	J	0.0020	0.00098	mg/L		08/09/18 15:00	08/10/18 16:57	1
Molybdenum	ND		0.010	0.0011	mg/L		08/09/18 15:00	08/10/18 16:57	1
Lead	ND		0.0010	0.00045	mg/L		08/09/18 15:00	08/10/18 16:57	1
Selenium	ND		0.0050	0.00089	mg/L		08/09/18 15:00	08/10/18 16:57	1
Lithium	ND		0.0080	0.0017	mg/L		08/09/18 15:00	08/10/18 16:57	1
Titanium	ND		0.010	0.0021	mg/L		08/09/18 15:00	08/10/18 16:57	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-340195/3-A
Matrix: Water
Analysis Batch: 340439

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 340195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0985		mg/L		98	80 - 120
Arsenic	1.00	0.967		mg/L		97	80 - 120
Barium	1.00	0.987		mg/L		99	80 - 120
Beryllium	1.00	0.930		mg/L		93	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Cadmium	1.00	0.987		mg/L		99	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Molybdenum	0.100	0.0945		mg/L		94	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	0.960		mg/L		96	80 - 120
Lithium	0.100	0.0916		mg/L		92	80 - 120
Titanium	0.100	0.0959		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-340794/1-A
Matrix: Water
Analysis Batch: 341027

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 340794

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/18 14:00	08/15/18 14:14	1

Lab Sample ID: LCS 240-340794/2-A
Matrix: Water
Analysis Batch: 341027

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 340794

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.45		ug/L		89	80 - 120

Lab Sample ID: 280-112898-1 MS
Matrix: Ground Water
Analysis Batch: 341027

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 340794

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	1.05		ug/L		105	80 - 120

Lab Sample ID: 280-112898-1 MSD
Matrix: Ground Water
Analysis Batch: 341027

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 340794

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	0.991		ug/L		99	80 - 120	5	20

Method: 9040B - pH

Lab Sample ID: LCS 280-425596/30
Matrix: Water
Analysis Batch: 425596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-425596/54
Matrix: Water
Analysis Batch: 425596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-425742/4
Matrix: Water
Analysis Batch: 425742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-425790/4
Matrix: Water
Analysis Batch: 425790

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-426402/6
Matrix: Water
Analysis Batch: 426402

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/16/18 12:39	1
Fluoride	ND		0.50	0.060	mg/L			08/16/18 12:39	1
Sulfate	ND		5.0	0.23	mg/L			08/16/18 12:39	1

Lab Sample ID: LCS 280-426402/4
Matrix: Water
Analysis Batch: 426402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.3		mg/L		98	90 - 110
Fluoride	5.00	4.92		mg/L		98	90 - 110
Sulfate	100	97.0		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-426402/5
Matrix: Water
Analysis Batch: 426402

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.1		mg/L		98	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-426402/5
Matrix: Water
Analysis Batch: 426402

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	4.94		mg/L		99	90 - 110	0	10
Sulfate	100	97.0		mg/L		97	90 - 110	0	10

Lab Sample ID: MRL 280-426402/3
Matrix: Water
Analysis Batch: 426402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.55	J	mg/L		102	50 - 150
Fluoride	0.200	0.158	J	mg/L		79	50 - 150
Sulfate	2.50	2.28	J	mg/L		91	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-425194/1
Matrix: Water
Analysis Batch: 425194

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/07/18 12:52	1

Lab Sample ID: LCS 280-425194/2
Matrix: Water
Analysis Batch: 425194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	498		mg/L		99	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-425228/1
Matrix: Water
Analysis Batch: 425228

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/07/18 15:13	1

Lab Sample ID: LCS 280-425228/2
Matrix: Water
Analysis Batch: 425228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	90.0		mg/L		90	86 - 114

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 280-112898-6 DU
Matrix: Water
Analysis Batch: 425228

Client Sample ID: MW-17EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	ND			ND		mg/L				NC	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-381216/14-A
Matrix: Water
Analysis Batch: 386822

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381216

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1737		0.0728	0.0745	1.00	0.0733	pCi/L	08/09/18 08:29	09/01/18 14:35	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/09/18 08:29*	*09/01/18 14:35*	*1*

Lab Sample ID: LCS 160-381216/1-A
Matrix: Water
Analysis Batch: 386821

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381216

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.86		1.11	1.00	0.0756	pCi/L	96	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.7*		*40 - 110*

Lab Sample ID: LCSD 160-381216/2-A
Matrix: Water
Analysis Batch: 386821

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 381216

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.13		1.04	1.00	0.0716	pCi/L	89	68 - 137	0.34	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.6*		*40 - 110*

Lab Sample ID: MB 160-382133/18-A
Matrix: Water
Analysis Batch: 387161

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382133

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1988		0.0803	0.0823	1.00	0.0791	pCi/L	08/14/18 13:16	09/05/18 06:01	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*08/14/18 13:16*	*09/05/18 06:01*	*1*

Lab Sample ID: LCS 160-382133/1-A
Matrix: Water
Analysis Batch: 387162

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382133

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.09		1.03	1.00	0.0747	pCi/L	89	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*

Lab Sample ID: LCSD 160-382133/2-A
Matrix: Water
Analysis Batch: 387162

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382133

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.57		1.08	1.00	0.0602	pCi/L	93	68 - 137	0.23	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.3*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-381222/14-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381222

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.07153	U	0.195	0.195	1.00	0.338	pCi/L	08/09/18 09:22	08/15/18 08:57	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:57*	*1*
Y Carrier	*87.9*		*40 - 110*	*08/09/18 09:22*	*08/15/18 08:57*	*1*

Lab Sample ID: LCS 160-381222/1-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381222

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	13.19		1.44	1.00	0.372	pCi/L	119	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.7*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-381222/2-A
Matrix: Water
Analysis Batch: 382625

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 381222

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	13.07		1.44	1.00	0.376	pCi/L	118	56 - 140	0.04	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.6*		*40 - 110*
Y Carrier	*81.9*		*40 - 110*

Lab Sample ID: MB 160-382144/18-A
Matrix: Water
Analysis Batch: 383015

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382144

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03498	U	0.225	0.225	1.00	0.411	pCi/L	08/14/18 14:09	08/17/18 16:03	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*08/14/18 14:09*	*08/17/18 16:03*	*1*
Y Carrier	*79.6*		*40 - 110*	*08/14/18 14:09*	*08/17/18 16:03*	*1*

Lab Sample ID: LCS 160-382144/1-A
Matrix: Water
Analysis Batch: 383020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382144

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	12.55		1.40	1.00	0.390	pCi/L	113	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*
Y Carrier	*78.1*		*40 - 110*

Lab Sample ID: LCSD 160-382144/2-A
Matrix: Water
Analysis Batch: 383020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382144

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	13.04		1.46	1.00	0.399	pCi/L	117	56 - 140	0.17	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.3*		*40 - 110*
Y Carrier	*78.1*		*40 - 110*

Metals

Prep Batch: 340195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total Recoverable	Ground Water	3005A	
280-112898-1	MW-17	Total Recoverable	Ground Water	3005A	
280-112898-2	MW-18	Total Recoverable	Ground Water	3005A	
280-112898-3	MW-19	Total Recoverable	Water	3005A	
280-112898-4	MW-20	Total Recoverable	Ground Water	3005A	
280-112898-5	MW-17D	Total Recoverable	Water	3005A	
280-112898-6	MW-17EB	Total Recoverable	Water	3005A	
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-340195/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-340195/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-112898-1 MS	MW-17	Dissolved	Ground Water	3005A	
280-112898-1 MSD	MW-17	Dissolved	Ground Water	3005A	

Analysis Batch: 340439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total Recoverable	Ground Water	6020A	340195
280-112898-2	MW-18	Total Recoverable	Ground Water	6020A	340195
280-112898-3	MW-19	Total Recoverable	Water	6020A	340195
280-112898-4	MW-20	Total Recoverable	Ground Water	6020A	340195
280-112898-5	MW-17D	Total Recoverable	Water	6020A	340195
280-112898-6	MW-17EB	Total Recoverable	Water	6020A	340195
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	6020A	340195
LCS 240-340195/3-A	Lab Control Sample	Total Recoverable	Water	6020A	340195

Analysis Batch: 340617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total Recoverable	Ground Water	6010C	340195
280-112898-1	MW-17	Total Recoverable	Ground Water	6010C	340195
280-112898-2	MW-18	Total Recoverable	Ground Water	6010C	340195
280-112898-3	MW-19	Total Recoverable	Water	6010C	340195
280-112898-4	MW-20	Total Recoverable	Ground Water	6010C	340195
280-112898-5	MW-17D	Total Recoverable	Water	6010C	340195
280-112898-6	MW-17EB	Total Recoverable	Water	6010C	340195
MB 240-340195/1-A	Method Blank	Total Recoverable	Water	6010C	340195
LCS 240-340195/2-A	Lab Control Sample	Total Recoverable	Water	6010C	340195
280-112898-1 MS	MW-17	Dissolved	Ground Water	6010C	340195
280-112898-1 MSD	MW-17	Dissolved	Ground Water	6010C	340195

Analysis Batch: 340754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-5	MW-17D	Total Recoverable	Water	6020A	340195

Prep Batch: 340794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Dissolved	Ground Water	7470A	
280-112898-1	MW-17	Total/NA	Ground Water	7470A	
280-112898-2	MW-18	Dissolved	Ground Water	7470A	
280-112898-2	MW-18	Total/NA	Ground Water	7470A	
280-112898-3	MW-19	Dissolved	Water	7470A	
280-112898-3	MW-19	Total/NA	Water	7470A	
280-112898-4	MW-20	Dissolved	Ground Water	7470A	

Metals (Continued)

Prep Batch: 340794 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-4	MW-20	Total/NA	Ground Water	7470A	
280-112898-5	MW-17D	Dissolved	Water	7470A	
280-112898-5	MW-17D	Total/NA	Water	7470A	
280-112898-6	MW-17EB	Total/NA	Water	7470A	
MB 240-340794/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-340794/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-112898-1 MS	MW-17	Total/NA	Ground Water	7470A	
280-112898-1 MSD	MW-17	Total/NA	Ground Water	7470A	

Analysis Batch: 341027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Dissolved	Ground Water	7470A	340794
280-112898-1	MW-17	Total/NA	Ground Water	7470A	340794
280-112898-2	MW-18	Dissolved	Ground Water	7470A	340794
280-112898-2	MW-18	Total/NA	Ground Water	7470A	340794
280-112898-3	MW-19	Dissolved	Water	7470A	340794
280-112898-3	MW-19	Total/NA	Water	7470A	340794
280-112898-4	MW-20	Dissolved	Ground Water	7470A	340794
280-112898-4	MW-20	Total/NA	Ground Water	7470A	340794
280-112898-5	MW-17D	Dissolved	Water	7470A	340794
280-112898-5	MW-17D	Total/NA	Water	7470A	340794
280-112898-6	MW-17EB	Total/NA	Water	7470A	340794
MB 240-340794/1-A	Method Blank	Total/NA	Water	7470A	340794
LCS 240-340794/2-A	Lab Control Sample	Total/NA	Water	7470A	340794
280-112898-1 MS	MW-17	Total/NA	Ground Water	7470A	340794
280-112898-1 MSD	MW-17	Total/NA	Ground Water	7470A	340794

General Chemistry

Analysis Batch: 425194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	SM 2540C	
280-112898-2	MW-18	Total/NA	Ground Water	SM 2540C	
280-112898-3	MW-19	Total/NA	Water	SM 2540C	
280-112898-4	MW-20	Total/NA	Ground Water	SM 2540C	
280-112898-5	MW-17D	Total/NA	Water	SM 2540C	
280-112898-6	MW-17EB	Total/NA	Water	SM 2540C	
MB 280-425194/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-425194/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 425228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	SM 2540D	
280-112898-2	MW-18	Total/NA	Ground Water	SM 2540D	
280-112898-3	MW-19	Total/NA	Water	SM 2540D	
280-112898-4	MW-20	Total/NA	Ground Water	SM 2540D	
280-112898-5	MW-17D	Total/NA	Water	SM 2540D	
280-112898-6	MW-17EB	Total/NA	Water	SM 2540D	
MB 280-425228/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-425228/2	Lab Control Sample	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 425228 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-6 DU	MW-17EB	Total/NA	Water	SM 2540D	

Analysis Batch: 425596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	9040B	
280-112898-2	MW-18	Total/NA	Ground Water	9040B	
280-112898-3	MW-19	Total/NA	Water	9040B	
280-112898-4	MW-20	Total/NA	Ground Water	9040B	
280-112898-5	MW-17D	Total/NA	Water	9040B	
LCS 280-425596/30	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-425596/54	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 425742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-425742/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 425790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-6	MW-17EB	Total/NA	Water	9040B	
LCS 280-425790/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 426402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	9056A	
280-112898-2	MW-18	Total/NA	Ground Water	9056A	
280-112898-3	MW-19	Total/NA	Water	9056A	
280-112898-3	MW-19	Total/NA	Water	9056A	
280-112898-4	MW-20	Total/NA	Ground Water	9056A	
280-112898-5	MW-17D	Total/NA	Water	9056A	
280-112898-6	MW-17EB	Total/NA	Water	9056A	
MB 280-426402/6	Method Blank	Total/NA	Water	9056A	
LCS 280-426402/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-426402/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-426402/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 381216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	PrecSep-21	
280-112898-2	MW-18	Total/NA	Ground Water	PrecSep-21	
280-112898-4	MW-20	Total/NA	Ground Water	PrecSep-21	
280-112898-5	MW-17D	Total/NA	Water	PrecSep-21	
280-112898-6	MW-17EB	Total/NA	Water	PrecSep-21	
MB 160-381216/14-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-381216/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-381216/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 381222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-1	MW-17	Total/NA	Ground Water	PrecSep_0	
280-112898-2	MW-18	Total/NA	Ground Water	PrecSep_0	
280-112898-4	MW-20	Total/NA	Ground Water	PrecSep_0	
280-112898-5	MW-17D	Total/NA	Water	PrecSep_0	
280-112898-6	MW-17EB	Total/NA	Water	PrecSep_0	
MB 160-381222/14-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-381222/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-381222/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 382133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-3	MW-19	Total/NA	Water	PrecSep-21	
MB 160-382133/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-382133/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-382133/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 382144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112898-3	MW-19	Total/NA	Water	PrecSep_0	
MB 160-382144/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-382144/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-382144/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Client Sample ID: MW-17

Date Collected: 08/03/18 12:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 02:00	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 02:22	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 20:26	DSH	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Dissolved	Analysis	7470A		1			341027	08/15/18 14:29	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:18	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 19:15	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 03:07	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.47 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386821	09/01/18 14:40	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.47 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:55	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: MW-18

Date Collected: 08/03/18 14:50
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 02:27	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 20:31	DSH	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Dissolved	Analysis	7470A		1			341027	08/15/18 14:33	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:31	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 19:33	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 03:51	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	112 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.29 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386821	09/01/18 14:40	MAR	TAL SL
Total/NA	Prep	PrecSep_0			500.29 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:55	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Client Sample ID: MW-19

Date Collected: 08/03/18 15:30
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 02:45	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 20:40	DSH	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Dissolved	Analysis	7470A		1			341027	08/15/18 14:37	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:35	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 21:41	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 04:36	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	426402	08/17/18 04:58	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	15 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			250.04 mL	1.0 g	382133	08/14/18 13:16	JLC	TAL SL
Total/NA	Analysis	9315		1			387162	09/05/18 05:58	KLS	TAL SL
Total/NA	Prep	PrecSep_0			250.04 mL	1.0 g	382144	08/14/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	383020	08/17/18 16:00	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: MW-20

Date Collected: 08/03/18 13:00
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 02:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 20:57	DSH	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Dissolved	Analysis	7470A		1			341027	08/15/18 14:41	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:39	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 19:19	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 05:20	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			999.98 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386821	09/01/18 14:40	MAR	TAL SL
Total/NA	Prep	PrecSep_0			999.98 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:55	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Client Sample ID: MW-17D

Date Collected: 08/03/18 12:10
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 03:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 21:06	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 20:56	DSH	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Dissolved	Analysis	7470A		1			341027	08/15/18 14:45	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:43	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425596	08/08/18 19:29	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 06:49	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386821	09/01/18 14:40	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:55	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: MW-17EB

Date Collected: 08/03/18 13:45
Date Received: 08/06/18 09:50

Lab Sample ID: 280-112898-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/14/18 03:13	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	340195	08/09/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340439	08/10/18 21:15	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	340794	08/14/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341027	08/15/18 14:47	AJC	TAL CAN
Total/NA	Analysis	9040B		1			425790	08/10/18 17:47	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	426402	08/17/18 07:33	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	425194	08/07/18 12:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	425228	08/07/18 15:13	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	381216	08/09/18 08:29	JLC	TAL SL
Total/NA	Analysis	9315		1			386822	09/01/18 14:34	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	381222	08/09/18 09:22	JLC	TAL SL
Total/NA	Analysis	9320		1			382625	08/15/18 08:56	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-112898-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Ground Water	Temperature
9040B		Water	Temperature
9056A		Ground Water	Chloride
9056A		Ground Water	Fluoride
9056A		Ground Water	Sulfate
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-112898-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18 *
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days): Standard			
State, Zip: CO, 80112				
Phone: 720-633-2380(Tel)	PO #: DEN-001			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Colorado	SSOW#:			

Analysis Requested

280-112898 Chain of Custody

Preservation Codes:
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
K - EDTA
L - EDA
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-A~~ MW-17	8/3/18	1200	G	Water	N	N	X	X	X	X	X	7	
~~MW-B~~ MW-18	8/3/18	1450	G	Water	N	N	X	X	X	X	X	6	
~~MW-C~~ MW-19	8/3/18	1530	G	Water	N	N	X	X	X	X	X	4	
~~MW-D~~ MW-20	8/3/18	1300	G	Water	N	N	X	X	X	X	X	8	
~~MW-E~~ MW-17D	8/3/18	1210	G	Water	N	N	X	X	X	X	X	7	
MW-17EB	8/3/18	1345	G	Water	N	N	X	X	X	X	X	7	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: [signature] JM | Date: ~~8/6/2018~~ JM | Time: ~~9:51 AM~~ JM | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	08/06/2018 9:50	HDR	[signature]	8/6/18 0950	TA Den

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.4, 0.9, 0.9°C IR#8 (F0.0 x fanal(y)) PR

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: N. Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	Analysis Requested	Preservation Codes:
City: Englewood	TAT Requested (days): Standard		A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: CO, 80112			
Phone: 720-633-2380(Tel)	PO #: DEN-001		Other: List: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Fl, Hg
Email: anna.lundin@hdrinc.com	WO #:		
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379		
Site: Colorado	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	B/10C/6020A-Diss. Metals 4 see list								Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D										
~~MW-A~~ MW-17	8/3/18	1200	G	Water	Y	N						X								1	
~~MW-B~~ MW-18	8/3/18	1450	G	Water	Y	N						X								1	
~~MW-C~~ MW-19	8/3/18	1530	G	Water	Y	N						X								1	
~~MW-D~~ MW-20	8/3/18	1300	G	Water	Y	N						X								1	
~~MW-E~~ MW-17D	8/3/18	1210	G	Water	Y	N						X								1	
~~MW-17EB~~ NH 8/5/18	8/3/18	1345	G	Water	Y	N														1	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: ~~Jack Meyer~~ JM Date: ~~8/6/2018~~ JM Time: ~~4:51 AM~~ JM Method of Shipment:

Relinquished by: Jack Meyer	Date/Time: 08/06/2018 9:50	Company: HDR	Received by: Madie Nelson	Date/Time: 8/6/18 0950	Company: TA Den
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450227.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112898-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/28/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014375			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Ref: S280-78189 Date: 07Aug18
Dep: Wgt: 1.00 LBS
DV: 0.00
SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00
Svcs: PRIORITY OVERNIGHT
TRCK: 4467 6846 8473

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered	Perform MS/M	6020A/3005A (Collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-17 (280-112898-1)	8/3/18	12:00 Mountain		Water			X	3	Use Collision Cell
MW-18 (280-112898-2)	8/3/18	14:50 Mountain		Water			X	2	Use Collision Cell
MW-19 (280-112898-3)	8/3/18	15:30 Mountain		Water			X	1	Use Collision Cell
MW-20 (280-112898-4)	8/3/18	13:00 Mountain		Water			X	4	Use Collision Cell
MW-17D (280-112898-5)	8/3/18	12:10 Mountain		Water			X	3	Use Collision Cell
MW-17EB (280-112898-6)	8/3/18	13:45 Mountain		Water			X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Diana Castro	8-7-18 1510	TAL Den			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450227.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112898-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/29/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/FIELD_FLTRD (MOD) 13 Metals	6010C/FIELD_FLTRD (MOD) Copy Analytes	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-17 (280-112898-1)	8/3/18	12:00 Mountain		Water			X	X	3	
MW-18 (280-112898-2)	8/3/18	14:50 Mountain		Water			X	X	2	
MW-19 (280-112898-3)	8/3/18	15:30 Mountain		Water			X	X	1	
MW-20 (280-112898-4)	8/3/18	13:00 Mountain		Water			X	X	4	
MW-17D (280-112898-5)	8/3/18	12:10 Mountain		Water			X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Diana Castro	8-7-18 1510	TAL Den			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

9/11/2018

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450226.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112898-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/30/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-112898-1)	8/3/18	12:00 Mountain		Water			X	X	X	2	
MW-18 (280-112898-2)	8/3/18	14:50 Mountain		Water			X	X	X	2	
MW-19 (280-112898-3)	8/3/18	15:30 Mountain		Water			X	X	X	1	
MW-20 (280-112898-4)	8/3/18	13:00 Mountain		Water			X	X	X	2	
MW-17D (280-112898-5)	8/3/18	12:10 Mountain		Water			X	X	X	2	
MW-17EB (280-112898-6)	8/3/18	13:45 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-7-2018 1549	TAL Den	[signature]	8/8/18 0900	TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

1.4/1.4

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450227.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112898-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/28/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-17 (280-112898-1)	8/3/18	12:00 Mountain		Water			X	3	Use Collision Cell
MW-18 (280-112898-2)	8/3/18	14:50 Mountain		Water			X	2	Use Collision Cell
MW-19 (280-112898-3)	8/3/18	15:30 Mountain		Water			X	1	Use Collision Cell
MW-20 (280-112898-4)	8/3/18	13:00 Mountain		Water			X	4	Use Collision Cell
MW-17D (280-112898-5)	8/3/18	12:10 Mountain		Water			X	3	Use Collision Cell
MW-17EB (280-112898-6)	8/3/18	13:45 Mountain		Water			X	2	Use Collision Cell

59

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Diana Castro	8-7-18 1510	TAL Den		8-8-18 915	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

9/11/2018

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-450227.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112898-2
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/29/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

S9

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/FIELD_FLTRD (MOD) 13 Metals	6010C/FIELD_FLTRD (MOD) Copy Analytes	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-17 (280-112898-1)	8/3/18	12:00 Mountain		Water			X	X	3	
MW-18 (280-112898-2)	8/3/18	14:50 Mountain		Water			X	X	2	
MW-19 (280-112898-3)	8/3/18	15:30 Mountain		Water			X	X	1	
MW-20 (280-112898-4)	8/3/18	13:00 Mountain		Water			X	X	4	
MW-17D (280-112898-5)	8/3/18	12:10 Mountain		Water			X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Laura Castro	8-7-18 1510	TAL Den		8-8-18 815	TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client TA Denver Site Name —

Cooler Received on 8-8-18 Opened on 8-8-18

Cooler unpacked by: [signature]

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C

IR GUN #36 (CF -0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC849161
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-112898-1

Login Number: 112898
List Number: 1
Creator: Rhoades, Joseph P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-112898-1

Login Number: 112898
List Number: 2
Creator: Carter, Kevin M

List Source: TestAmerica St. Louis
List Creation: 08/08/18 12:43 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
280-112898-1	MW-17	97.3
280-112898-2	MW-18	70.8
280-112898-4	MW-20	92.0

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
280-112898-3	MW-19	17.7 X
280-112898-5	MW-17D	97.1
280-112898-6	MW-17EB	98.5
LCS 160-381216/1-A	Lab Control Sample	94.7
LCS 160-382133/1-A	Lab Control Sample	97.6
LCSD 160-381216/2-A	Lab Control Sample Dup	95.6
LCSD 160-382133/2-A	Lab Control Sample Dup	92.3
MB 160-381216/14-A	Method Blank	101
MB 160-382133/18-A	Method Blank	94.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
280-112898-1	MW-17	97.3	88.6
280-112898-2	MW-18	70.8	84.9
280-112898-4	MW-20	92.0	87.1

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
280-112898-3	MW-19	17.7 X	80.4
280-112898-5	MW-17D	97.1	78.9
280-112898-6	MW-17EB	98.5	82.2
LCS 160-381222/1-A	Lab Control Sample	94.7	84.9

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-112898-1

Method: 9320 - Radium-228 (GFPC) (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-382144/1-A	Lab Control Sample	97.6	78.1
LCSD 160-381222/2-A	Lab Control Sample Dup	95.6	81.9
LCSD 160-382144/2-A	Lab Control Sample Dup	92.3	78.1
MB 160-381222/14-A	Method Blank	101	87.9
MB 160-382144/18-A	Method Blank	94.7	79.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-114377-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
10/23/2018 2:51:48 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-114377-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-114377-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 9/14/2018 12:18 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 13.8º C and 21.2º C.

Receipt Exceptions

1L nitric preserved bottle received with no sample ID given. Based on containers received and all other samples having been accounted for, container was associated with sample ID MW-18. Please note that the label placed on the bottle was a label for an unpreserved bottle.

An additional 1L unpreserved bottle, for sample ID MW-18EB, was received with a printed label stating sample is nitric preserved (but the bottle is unpreserved). Label was likely swapped with the discrepant label above.

TOTAL RECOVERABLE METALS

Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-19 (280-114377-3), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/20/2018 and analyzed on 09/21/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-19 (280-114377-3), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/20/2018 and analyzed on 10/05/2018.

Beryllium was detected in method blank MB 240-346379/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-19 (280-114377-3), MW-20 (280-114377-4), MW-20D (280-114377-5) and

Job ID: 280-114377-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

MW-18EB (280-114377-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 09/20/2018 and analyzed on 09/21/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/19/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 09/18/2018.

Total Suspended Solids was detected in method blank MB 280-430046/1 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/21/2018 and 09/26/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/30/2018 and 10/01/2018.

Samples MW-18 (280-114377-2)[10X] and MW-20 (280-114377-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/20/2018 and analyzed on 10/12/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228
Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/20/2018 and analyzed on 09/27/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-17 (280-114377-1), MW-18

Job ID: 280-114377-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-17 (280-114377-1), MW-18 (280-114377-2), MW-20 (280-114377-4), MW-20D (280-114377-5) and MW-18EB (280-114377-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/18/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Client Sample ID: MW-17 — Lab Sample ID: 280-114377-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.43		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	41		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00068	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00059	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0080	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.0072	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	70		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	27		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	370		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-18 — Lab Sample ID: 280-114377-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.31		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	34		5.0	0.31	mg/L	1		6010C	Total Recoverable
Antimony	0.00074	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0015	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.036		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00021	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00052	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0041		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.025		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00058	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	30		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.6		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	210		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	700		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	23	B	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Client Sample ID: MW-19 — Lab Sample ID: 280-114377-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.9		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	100		5.0	0.31	mg/L	1		6010C	Total Recoverable
Antimony	0.0031		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0067		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.18		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00099	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00029	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0089		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.052		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.070		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.018		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0062		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00024	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.092		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

Client Sample ID: MW-20 — Lab Sample ID: 280-114377-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.51		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	49		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.018		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Molybdenum	0.019		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.023		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	72		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.3	J	5.0	0.60	mg/L	10		9056A	Total/NA
Sulfate	160		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	630		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-20D — Lab Sample ID: 280-114377-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.52		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	49		5.0	0.31	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-20D (Continued)

Lab Sample ID: 280-114377-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.016		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Molybdenum	0.018		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.022		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	72		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	160		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	640		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-18EB

Lab Sample ID: 280-114377-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	7.0	J	10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-114377-1	MW-17	Water	09/14/18 10:30	09/14/18 12:18
280-114377-2	MW-18	Water	09/14/18 08:00	09/14/18 12:18
280-114377-3	MW-19	Water	09/14/18 11:00	09/14/18 12:18
280-114377-4	MW-20	Water	09/14/18 09:45	09/14/18 12:18
280-114377-5	MW-20D	Water	09/14/18 09:55	09/14/18 12:18
280-114377-6	MW-18EB	Water	09/14/18 08:00	09/14/18 12:18

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.43**		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 13:33	1
Calcium	**41**		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 13:33	1

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.31**		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 14:02	1
Calcium	**34**		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 14:02	1

Client Sample ID: MW-19
Date Collected: 09/14/18 11:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.9**		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 14:07	1
Calcium	**100**		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 14:07	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.51**		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 14:11	1
Calcium	**49**		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 14:11	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.52**		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 14:16	1
Calcium	**49**		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 14:16	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 14:20	1
Calcium	ND		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 14:20	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:20	1
Arsenic	ND		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:20	1
Barium	**0.12**		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:20	1
Beryllium	**0.00068**	**J B**	0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:20	1
Cadmium	ND		0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:20	1
Cobalt	**0.00059**	**J**	0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:20	1
Chromium	ND		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:20	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.0080	J	0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:20	1
Lead	ND		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:20	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:20	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:20	1
Lithium	0.0072	J	0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:20	1

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00074	J	0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:34	1
Arsenic	0.0015	J	0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:34	1
Barium	0.036		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:34	1
Beryllium	ND		0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:34	1
Cadmium	0.00021	J	0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:34	1
Cobalt	0.00052	J	0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:34	1
Chromium	0.0041		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:34	1
Molybdenum	0.025		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:34	1
Lead	0.00058	J	0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:34	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:34	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:34	1
Lithium	0.035		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:34	1

Client Sample ID: MW-19
Date Collected: 09/14/18 11:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0031		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:37	1
Arsenic	0.0067		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:37	1
Barium	0.18		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:37	1
Beryllium	0.00099	J B	0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:37	1
Cadmium	0.00029	J	0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:37	1
Cobalt	0.0089		0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:37	1
Chromium	0.052		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:37	1
Molybdenum	0.070		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:37	1
Lead	0.018		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:37	1
Selenium	0.0062		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:37	1
Thallium	0.00024	J	0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:37	1
Lithium	0.092		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:37	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:39	1
Arsenic	ND		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:39	1
Barium	0.018		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:39	1
Beryllium	ND		0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:39	1
Cadmium	ND		0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:39	1
Cobalt	ND		0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:39	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:39	1
Molybdenum	**0.019**		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:39	1
Lead	ND		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:39	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:39	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:39	1
Lithium	**0.023**		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:39	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:41	1
Arsenic	ND		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:41	1
Barium	**0.016**		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:41	1
Beryllium	ND		0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:41	1
Cadmium	ND		0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:41	1
Cobalt	ND		0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:41	1
Chromium	ND		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:41	1
Molybdenum	**0.018**		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:41	1
Lead	ND		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:41	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:41	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:41	1
Lithium	**0.022**		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:41	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:43	1
Arsenic	ND		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:43	1
Barium	ND		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:43	1
Beryllium	ND		0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:43	1
Cadmium	ND		0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:43	1
Cobalt	ND		0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:43	1
Chromium	ND		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:43	1
Molybdenum	ND		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:43	1
Lead	ND		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:43	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:43	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:43	1
Lithium	ND		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:43	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:08	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:15	1

Client Sample ID: MW-19
Date Collected: 09/14/18 11:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:17	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:19	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:21	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:27	1

General Chemistry

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU			09/21/18 13:42	1
Temperature	**19.6**	**HF**	1.0	1.0	Degrees C			09/21/18 13:42	1
Chloride	**70**		3.0	0.25	mg/L			09/30/18 23:54	1
Fluoride	**1.2**		0.50	0.060	mg/L			09/30/18 23:54	1
Sulfate	**27**		5.0	0.23	mg/L			09/30/18 23:54	1
Total Dissolved Solids (TDS)	**370**		10	4.7	mg/L			09/19/18 08:17	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/18/18 13:00	1

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**8.1**	**HF**	0.1	0.1	SU			09/26/18 06:11	1
Temperature	**17.6**	**HF**	1.0	1.0	Degrees C			09/26/18 06:11	1
Chloride	**30**		3.0	0.25	mg/L			10/01/18 00:13	1
Fluoride	**2.6**		0.50	0.060	mg/L			10/01/18 00:13	1
Sulfate	**210**		50	2.3	mg/L			10/01/18 00:31	10
Total Dissolved Solids (TDS)	**700**		10	4.7	mg/L			09/19/18 08:17	1
Total Suspended Solids	**23**	**B**	4.0	1.1	mg/L			09/18/18 13:00	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			09/21/18 13:16	1
Temperature	19.1	HF	1.0	1.0	Degrees C			09/21/18 13:16	1
Chloride	72		30	2.5	mg/L			10/01/18 00:50	10
Fluoride	2.3	J	5.0	0.60	mg/L			10/01/18 00:50	10
Sulfate	160		50	2.3	mg/L			10/01/18 00:50	10
Total Dissolved Solids (TDS)	630		10	4.7	mg/L			09/19/18 08:17	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/18/18 13:00	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			09/21/18 14:12	1
Temperature	20.1	HF	1.0	1.0	Degrees C			09/21/18 14:12	1
Chloride	72		3.0	0.25	mg/L			10/01/18 02:05	1
Fluoride	2.5		0.50	0.060	mg/L			10/01/18 02:05	1
Sulfate	160		5.0	0.23	mg/L			10/01/18 02:05	1
Total Dissolved Solids (TDS)	640		10	4.7	mg/L			09/19/18 08:17	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/18/18 13:00	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.5	HF	0.1	0.1	SU			09/21/18 13:04	1
Temperature	19.1	HF	1.0	1.0	Degrees C			09/21/18 13:04	1
Chloride	ND		3.0	0.25	mg/L			10/01/18 02:42	1
Fluoride	ND		0.50	0.060	mg/L			10/01/18 02:42	1
Sulfate	ND		5.0	0.23	mg/L			10/01/18 02:42	1
Total Dissolved Solids (TDS)	7.0	J	10	4.7	mg/L			09/19/18 08:17	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/18/18 13:00	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.265		0.0812	0.0847	1.00	0.0786	pCi/L	09/20/18 09:24	10/12/18 08:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*09/20/18 09:24*	*10/12/18 08:41*	*1*

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.244		0.0745	0.0776	1.00	0.0772	pCi/L	09/20/18 09:24	10/12/18 08:41	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	09/20/18 09:24	10/12/18 08:41	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.288		0.0761	0.0804	1.00	0.0677	pCi/L	09/20/18 09:24	10/12/18 08:42	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	09/20/18 09:24	10/12/18 08:42	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.387		0.0880	0.0947	1.00	0.0774	pCi/L	09/20/18 09:24	10/12/18 08:42	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	09/20/18 09:24	10/12/18 08:42	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.306		0.0763	0.0811	1.00	0.0646	pCi/L	09/20/18 09:24	10/12/18 08:42	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	09/20/18 09:24	10/12/18 08:42	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0652	U	0.290	0.290	1.00	0.507	pCi/L	09/20/18 10:05	09/27/18 17:26	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	09/20/18 10:05	09/27/18 17:26	1
Y Carrier	88.2		40 - 110	09/20/18 10:05	09/27/18 17:26	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0899	U	0.286	0.286	1.00	0.497	pCi/L	09/20/18 10:05	09/27/18 17:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*
Y Carrier	*88.6*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0846	U	0.244	0.244	1.00	0.456	pCi/L	09/20/18 10:05	09/27/18 17:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*
Y Carrier	*89.7*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.120	U	0.238	0.238	1.00	0.454	pCi/L	09/20/18 10:05	09/27/18 17:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*
Y Carrier	*85.2*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:26*	*1*

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.251	U	0.298	0.299	1.00	0.491	pCi/L	09/20/18 10:05	09/27/18 17:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:27*	*1*
Y Carrier	*87.9*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:27*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17
Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.330	U	0.301	0.302	5.00	0.507	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-18
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.334	U	0.296	0.296	5.00	0.497	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-20
Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.203	U	0.256	0.257	5.00	0.456	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-20D
Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.267	U	0.254	0.256	5.00	0.454	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-18EB
Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.557**		0.308	0.310	5.00	0.491	pCi/L		10/18/18 09:44	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-346379/1-A
Matrix: Water
Analysis Batch: 346588

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/20/18 15:00	09/21/18 13:25	1
Calcium	ND		5.0	0.31	mg/L		09/20/18 15:00	09/21/18 13:25	1

Lab Sample ID: LCS 240-346379/2-A
Matrix: Water
Analysis Batch: 346588

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.01		mg/L		101	80 - 120
Calcium	50.0	47.0		mg/L		94	80 - 120

Lab Sample ID: 280-114377-1 MS
Matrix: Water
Analysis Batch: 346588

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.43		1.00	1.50		mg/L		107	75 - 125
Calcium	41		50.0	90.7		mg/L		99	75 - 125

Lab Sample ID: 280-114377-1 MSD
Matrix: Water
Analysis Batch: 346588

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.43		1.00	1.48		mg/L		105	75 - 125	1	20
Calcium	41		50.0	90.8		mg/L		99	75 - 125	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-346379/1-A
Matrix: Water
Analysis Batch: 349015

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/20/18 15:00	10/05/18 20:16	1
Arsenic	ND		0.0050	0.00075	mg/L		09/20/18 15:00	10/05/18 20:16	1
Barium	ND		0.0050	0.0022	mg/L		09/20/18 15:00	10/05/18 20:16	1
Beryllium	0.000586	J	0.0010	0.00031	mg/L		09/20/18 15:00	10/05/18 20:16	1
Cadmium	ND		0.0010	0.00021	mg/L		09/20/18 15:00	10/05/18 20:16	1
Cobalt	ND		0.0010	0.00019	mg/L		09/20/18 15:00	10/05/18 20:16	1
Chromium	ND		0.0020	0.00098	mg/L		09/20/18 15:00	10/05/18 20:16	1
Molybdenum	ND		0.010	0.0011	mg/L		09/20/18 15:00	10/05/18 20:16	1
Lead	ND		0.0010	0.00045	mg/L		09/20/18 15:00	10/05/18 20:16	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/18 15:00	10/05/18 20:16	1
Thallium	ND		0.0010	0.00020	mg/L		09/20/18 15:00	10/05/18 20:16	1
Lithium	ND		0.0080	0.0017	mg/L		09/20/18 15:00	10/05/18 20:16	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-346379/3-A
Matrix: Water
Analysis Batch: 349015

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0958		mg/L		96	80 - 120
Arsenic	1.00	0.909		mg/L		91	80 - 120
Barium	1.00	0.997		mg/L		100	80 - 120
Beryllium	1.00	1.00		mg/L		100	80 - 120
Cadmium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	0.949		mg/L		95	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Molybdenum	0.100	0.0953		mg/L		95	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Selenium	1.00	0.905		mg/L		91	80 - 120
Thallium	0.250	0.254		mg/L		102	80 - 120
Lithium	0.100	0.0940		mg/L		94	80 - 120

Lab Sample ID: 280-114377-1 MS
Matrix: Water
Analysis Batch: 349015

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0993		mg/L		99	75 - 125
Arsenic	ND		1.00	0.940		mg/L		94	75 - 125
Barium	0.12		1.00	1.15		mg/L		103	75 - 125
Beryllium	0.00068	J B	1.00	1.01		mg/L		101	75 - 125
Cadmium	ND		1.00	1.01		mg/L		101	75 - 125
Cobalt	0.00059	J	1.00	0.949		mg/L		95	75 - 125
Chromium	ND		1.00	1.01		mg/L		101	75 - 125
Molybdenum	0.0080	J	0.100	0.108		mg/L		100	75 - 125
Lead	ND		1.00	1.01		mg/L		101	75 - 125
Selenium	ND		1.00	0.935		mg/L		94	75 - 125
Thallium	ND		0.250	0.253		mg/L		101	75 - 125
Lithium	0.0072	J	0.100	0.105		mg/L		98	75 - 125

Lab Sample ID: 280-114377-1 MSD
Matrix: Water
Analysis Batch: 349015

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 346379

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0996		mg/L		100	75 - 125	0	20
Arsenic	ND		1.00	0.940		mg/L		94	75 - 125	0	20
Barium	0.12		1.00	1.16		mg/L		104	75 - 125	0	20
Beryllium	0.00068	J B	1.00	0.983		mg/L		98	75 - 125	3	20
Cadmium	ND		1.00	1.01		mg/L		101	75 - 125	1	20
Cobalt	0.00059	J	1.00	0.943		mg/L		94	75 - 125	1	20
Chromium	ND		1.00	0.985		mg/L		99	75 - 125	3	20
Molybdenum	0.0080	J	0.100	0.107		mg/L		100	75 - 125	1	20
Lead	ND		1.00	1.00		mg/L		100	75 - 125	1	20
Selenium	ND		1.00	0.965		mg/L		96	75 - 125	3	20
Thallium	ND		0.250	0.248		mg/L		99	75 - 125	2	20
Lithium	0.0072	J	0.100	0.105		mg/L		97	75 - 125	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-346381/1-A
Matrix: Water
Analysis Batch: 346583

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 346381

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/20/18 14:00	09/21/18 17:04	1

Lab Sample ID: LCS 240-346381/2-A
Matrix: Water
Analysis Batch: 346583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 346381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.07		ug/L		101	80 - 120

Lab Sample ID: 280-114377-1 MS
Matrix: Water
Analysis Batch: 346583

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 346381

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	0.937		ug/L		94	80 - 120

Lab Sample ID: 280-114377-1 MSD
Matrix: Water
Analysis Batch: 346583

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 346381

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	0.905		ug/L		90	80 - 120	3	20

Method: 9040B - pH

Lab Sample ID: LCS 280-430546/4
Matrix: Water
Analysis Batch: 430546

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-431056/4
Matrix: Water
Analysis Batch: 431056

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 280-114377-2 DU
Matrix: Water
Analysis Batch: 431056

Client Sample ID: MW-18
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	8.1	HF	8.1		SU		0.6	5
Temperature	17.6	HF	17.6		Degrees C		0.5	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-431514/6
Matrix: Water
Analysis Batch: 431514

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/30/18 14:09	1
Fluoride	ND		0.50	0.060	mg/L			09/30/18 14:09	1
Sulfate	ND		5.0	0.23	mg/L			09/30/18 14:09	1

Lab Sample ID: LCS 280-431514/4
Matrix: Water
Analysis Batch: 431514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	5.08		mg/L		102	90 - 110
Sulfate	100	103		mg/L		103	90 - 110

Lab Sample ID: LCSD 280-431514/5
Matrix: Water
Analysis Batch: 431514

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	5.09		mg/L		102	90 - 110	0	10
Sulfate	100	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-431514/3
Matrix: Water
Analysis Batch: 431514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.47	J	mg/L		99	50 - 150
Fluoride	0.200	0.169	J	mg/L		84	50 - 150
Sulfate	2.50	2.79	J	mg/L		112	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-430134/1
Matrix: Water
Analysis Batch: 430134

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/19/18 08:17	1

Lab Sample ID: LCS 280-430134/2
Matrix: Water
Analysis Batch: 430134

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	497		mg/L		99	86 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 280-114377-1 DU
Matrix: Water
Analysis Batch: 430134

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	370			369		mg/L				0.8	10

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-430046/1
Matrix: Water
Analysis Batch: 430046

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	2.00	J	4.0	1.1	mg/L			09/18/18 13:00	1

Lab Sample ID: LCS 280-430046/2
Matrix: Water
Analysis Batch: 430046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	93.6		mg/L		94	86 - 114		

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-390430/23-A
Matrix: Water
Analysis Batch: 394750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390430

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2663		0.0711	0.0750	1.00	0.0606	pCi/L	09/20/18 09:24	10/12/18 12:45	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*09/20/18 09:24*	*10/12/18 12:45*	*1*

Lab Sample ID: LCS 160-390430/1-A
Matrix: Water
Analysis Batch: 394747

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390430

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			15.1	14.94		1.44	1.00	0.0630	pCi/L	99	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-390430/2-A
Matrix: Water
Analysis Batch: 394747

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390430

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			15.1	14.63		1.40	1.00	0.0686	pCi/L	97	68 - 137	0.11	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-390509/23-A
Matrix: Water
Analysis Batch: 391558

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390509

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3268	U	0.283	0.285	1.00	0.453	pCi/L	09/20/18 10:05	09/27/18 17:28	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:28*	*1*
Y Carrier	*93.8*		*40 - 110*	*09/20/18 10:05*	*09/27/18 17:28*	*1*

Lab Sample ID: LCS 160-390509/1-A
Matrix: Water
Analysis Batch: 391558

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390509

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			14.6	18.35		1.97	1.00	0.497	pCi/L	126	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

Lab Sample ID: LCSD 160-390509/2-A
Matrix: Water
Analysis Batch: 391558

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390509

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			14.6	15.51		1.71	1.00	0.470	pCi/L	106	56 - 140	0.77	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

Metals

Prep Batch: 346379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total Recoverable	Water	3005A	
280-114377-2	MW-18	Total Recoverable	Water	3005A	
280-114377-3	MW-19	Total Recoverable	Water	3005A	
280-114377-4	MW-20	Total Recoverable	Water	3005A	
280-114377-5	MW-20D	Total Recoverable	Water	3005A	
280-114377-6	MW-18EB	Total Recoverable	Water	3005A	
MB 240-346379/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-346379/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-346379/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-114377-1 MS	MW-17	Total Recoverable	Water	3005A	
280-114377-1 MS	MW-17	Total Recoverable	Water	3005A	
280-114377-1 MSD	MW-17	Total Recoverable	Water	3005A	
280-114377-1 MSD	MW-17	Total Recoverable	Water	3005A	

Prep Batch: 346381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	7470A	
280-114377-2	MW-18	Total/NA	Water	7470A	
280-114377-3	MW-19	Total/NA	Water	7470A	
280-114377-4	MW-20	Total/NA	Water	7470A	
280-114377-5	MW-20D	Total/NA	Water	7470A	
280-114377-6	MW-18EB	Total/NA	Water	7470A	
MB 240-346381/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-346381/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-114377-1 MS	MW-17	Total/NA	Water	7470A	
280-114377-1 MSD	MW-17	Total/NA	Water	7470A	

Analysis Batch: 346583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	7470A	346381
280-114377-2	MW-18	Total/NA	Water	7470A	346381
280-114377-3	MW-19	Total/NA	Water	7470A	346381
280-114377-4	MW-20	Total/NA	Water	7470A	346381
280-114377-5	MW-20D	Total/NA	Water	7470A	346381
280-114377-6	MW-18EB	Total/NA	Water	7470A	346381
MB 240-346381/1-A	Method Blank	Total/NA	Water	7470A	346381
LCS 240-346381/2-A	Lab Control Sample	Total/NA	Water	7470A	346381
280-114377-1 MS	MW-17	Total/NA	Water	7470A	346381
280-114377-1 MSD	MW-17	Total/NA	Water	7470A	346381

Analysis Batch: 346588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total Recoverable	Water	6010C	346379
280-114377-2	MW-18	Total Recoverable	Water	6010C	346379
280-114377-3	MW-19	Total Recoverable	Water	6010C	346379
280-114377-4	MW-20	Total Recoverable	Water	6010C	346379
280-114377-5	MW-20D	Total Recoverable	Water	6010C	346379
280-114377-6	MW-18EB	Total Recoverable	Water	6010C	346379
MB 240-346379/1-A	Method Blank	Total Recoverable	Water	6010C	346379
LCS 240-346379/2-A	Lab Control Sample	Total Recoverable	Water	6010C	346379
280-114377-1 MS	MW-17	Total Recoverable	Water	6010C	346379

Metals (Continued)

Analysis Batch: 346588 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1 MSD	MW-17	Total Recoverable	Water	6010C	346379

Analysis Batch: 349015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total Recoverable	Water	6020A	346379
280-114377-2	MW-18	Total Recoverable	Water	6020A	346379
280-114377-3	MW-19	Total Recoverable	Water	6020A	346379
280-114377-4	MW-20	Total Recoverable	Water	6020A	346379
280-114377-5	MW-20D	Total Recoverable	Water	6020A	346379
280-114377-6	MW-18EB	Total Recoverable	Water	6020A	346379
MB 240-346379/1-A	Method Blank	Total Recoverable	Water	6020A	346379
LCS 240-346379/3-A	Lab Control Sample	Total Recoverable	Water	6020A	346379
280-114377-1 MS	MW-17	Total Recoverable	Water	6020A	346379
280-114377-1 MSD	MW-17	Total Recoverable	Water	6020A	346379

General Chemistry

Analysis Batch: 430046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	SM 2540D	
280-114377-2	MW-18	Total/NA	Water	SM 2540D	
280-114377-4	MW-20	Total/NA	Water	SM 2540D	
280-114377-5	MW-20D	Total/NA	Water	SM 2540D	
280-114377-6	MW-18EB	Total/NA	Water	SM 2540D	
MB 280-430046/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-430046/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 430134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	SM 2540C	
280-114377-2	MW-18	Total/NA	Water	SM 2540C	
280-114377-4	MW-20	Total/NA	Water	SM 2540C	
280-114377-5	MW-20D	Total/NA	Water	SM 2540C	
280-114377-6	MW-18EB	Total/NA	Water	SM 2540C	
MB 280-430134/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-430134/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-114377-1 DU	MW-17	Total/NA	Water	SM 2540C	

Analysis Batch: 430546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	9040B	
280-114377-4	MW-20	Total/NA	Water	9040B	
280-114377-5	MW-20D	Total/NA	Water	9040B	
280-114377-6	MW-18EB	Total/NA	Water	9040B	
LCS 280-430546/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 431056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-2	MW-18	Total/NA	Water	9040B	
LCS 280-431056/4	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 431056 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-2 DU	MW-18	Total/NA	Water	9040B	

Analysis Batch: 431514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	9056A	
280-114377-2	MW-18	Total/NA	Water	9056A	
280-114377-2	MW-18	Total/NA	Water	9056A	
280-114377-4	MW-20	Total/NA	Water	9056A	
280-114377-5	MW-20D	Total/NA	Water	9056A	
280-114377-6	MW-18EB	Total/NA	Water	9056A	
MB 280-431514/6	Method Blank	Total/NA	Water	9056A	
LCS 280-431514/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-431514/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-431514/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 390430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	PrecSep-21	
280-114377-2	MW-18	Total/NA	Water	PrecSep-21	
280-114377-4	MW-20	Total/NA	Water	PrecSep-21	
280-114377-5	MW-20D	Total/NA	Water	PrecSep-21	
280-114377-6	MW-18EB	Total/NA	Water	PrecSep-21	
MB 160-390430/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-390430/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-390430/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 390509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114377-1	MW-17	Total/NA	Water	PrecSep_0	
280-114377-2	MW-18	Total/NA	Water	PrecSep_0	
280-114377-4	MW-20	Total/NA	Water	PrecSep_0	
280-114377-5	MW-20D	Total/NA	Water	PrecSep_0	
280-114377-6	MW-18EB	Total/NA	Water	PrecSep_0	
MB 160-390509/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-390509/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-390509/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Client Sample ID: MW-17

Date Collected: 09/14/18 10:30
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 13:33	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:20	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:08	AJC	TAL CAN
Total/NA	Analysis	9040B		1			430546	09/21/18 13:42	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431514	09/30/18 23:54	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430134	09/19/18 08:17	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430046	09/18/18 13:00	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.07 mL	1.0 g	390430	09/20/18 09:24	JLC	TAL SL
Total/NA	Analysis	9315		1			394747	10/12/18 08:41	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.07 mL	1.0 g	390509	09/20/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			391558	09/27/18 17:26	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Client Sample ID: MW-18

Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 14:02	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:34	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:15	AJC	TAL CAN
Total/NA	Analysis	9040B		1			431056	09/26/18 06:11	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431514	10/01/18 00:13	A1D	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	431514	10/01/18 00:31	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430134	09/19/18 08:17	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430046	09/18/18 13:00	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.15 mL	1.0 g	390430	09/20/18 09:24	JLC	TAL SL
Total/NA	Analysis	9315		1			394747	10/12/18 08:41	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.15 mL	1.0 g	390509	09/20/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			391558	09/27/18 17:26	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Client Sample ID: MW-19

Date Collected: 09/14/18 11:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 14:07	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:37	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:17	AJC	TAL CAN

Client Sample ID: MW-20

Date Collected: 09/14/18 09:45
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 14:11	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:39	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:19	AJC	TAL CAN
Total/NA	Analysis	9040B		1			430546	09/21/18 13:16	SGB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	431514	10/01/18 00:50	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430134	09/19/18 08:17	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430046	09/18/18 13:00	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.21 mL	1.0 g	390430	09/20/18 09:24	JLC	TAL SL
Total/NA	Analysis	9315		1			394747	10/12/18 08:42	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.21 mL	1.0 g	390509	09/20/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			391558	09/27/18 17:26	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Client Sample ID: MW-20D

Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 14:16	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:41	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:21	AJC	TAL CAN
Total/NA	Analysis	9040B		1			430546	09/21/18 14:12	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431514	10/01/18 02:05	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430134	09/19/18 08:17	VB	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Client Sample ID: MW-20D

Date Collected: 09/14/18 09:55
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430046	09/18/18 13:00	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.15 mL	1.0 g	390430	09/20/18 09:24	JLC	TAL SL
Total/NA	Analysis	9315		1			394747	10/12/18 08:42	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.15 mL	1.0 g	390509	09/20/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			391558	09/27/18 17:26	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Client Sample ID: MW-18EB

Date Collected: 09/14/18 08:00
Date Received: 09/14/18 12:18

Lab Sample ID: 280-114377-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346588	09/21/18 14:20	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346379	09/20/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349015	10/05/18 20:43	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	346381	09/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			346583	09/21/18 17:27	AJC	TAL CAN
Total/NA	Analysis	9040B		1			430546	09/21/18 13:04	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431514	10/01/18 02:42	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430134	09/19/18 08:17	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430046	09/18/18 13:00	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.67 mL	1.0 g	390430	09/20/18 09:24	JLC	TAL SL
Total/NA	Analysis	9315		1			394747	10/12/18 08:42	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.67 mL	1.0 g	390509	09/20/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			391558	09/27/18 17:27	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-114377-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-114377-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
(303) 736-0100

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Matt Rohr	Site Contact: Nick Hanrahan	Date: 9/14/18	COC No:
HDR Inc	Tel/Fax: 303-764-537	Lab Contact:	Carrier:	1 of 1 COCs
1670 Broadway, Suite 3400	**Analysis Turnaround Time**			Sampler:
Denver, CO 80202	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(907) 644-2078 Phone	TAT if different from Below _____			Walk-in Client:
Matt.Rohr@hdrinc.com Email	☐ 2 weeks			Lab Sampling:
Project Name: Xcel Energy GW CCR	☐ 1 week			
Site: VALMONT	☐ 2 days			Job / SDG No.:
PO# 10025968	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Total Dissolved Solids	Total Suspendid Solids	pH, Fluoride, Chloride, Sulfate	Ra226/Ra228 combined	App III - Total Metals: Calcium, Boron	App IV Total Metals (see list)	App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, F
MW-17	9/14/18	1030	G	W		N	N	x	x	x	x	x	x	
MW-18	9/14/18	0800	G	W		N	N	x	x	x	x	x	x	
MW-19	9/14/18	1100	G	W	1	N	N	x	x	x	x	x	x	Only perform tot. metals App III & IV
MW-20	9/14/18	0945	G	W		N	N	x	x	x	x	x	x	
MW-20D ~~DUP~~	9/14/18	0955	G	W		N	N	x	x	x	x	x	x	
MW-18EB EB	9/14/18	0800	G	W		N	N	x	x	x	x	x	x	

280-114377 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: Joseph C Joyner	Company: HDR	Date/Time: 9-14-18 1220	Received by:	Company: TA Denver	Date/Time: 9/14/18 1218
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Temps: 13.3, 20.7 TR & CT ±0.5 x'fer by 9/14/18

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-454943.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114377-1
Address: 13715 Rider Trail North,	Due Date Requested: 10/10/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-114377-1)	9/14/18	10:30 Mountain		Water			X	X	X	1	
MW-18 (280-114377-2)	9/14/18	08:00 Mountain		Water			X	X	X	1	
MW-20 (280-114377-4)	9/14/18	09:45 Mountain		Water			X	X	X	1	
MW-20D (280-114377-5)	9/14/18	09:55 Mountain		Water			X	X	X	1	
MW-18EB (280-114377-6)	9/14/18	08:00 Mountain		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:
Empty Kit Relinquished by: Date:	Time: Method of Shipment:

Relinquished by:	Date/Time: 9-18-18 1605	Company TAL	Received by:	Date/Time: 9.19.18 0855	Company TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

36/4,5

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-454937.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114377-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/8/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

S50

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron & Calcium	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-114377-1)	9/14/18	10:30 Mountain		Water			X	X	X	1	Use Collision Cell
MW-18 (280-114377-2)	9/14/18	08:00 Mountain		Water			X	X	X	1	Use Collision Cell
MW-19 (280-114377-3)	9/14/18	11:00 Mountain		Water			X	X	X	1	Use Collision Cell
MW-20 (280-114377-4)	9/14/18	09:45 Mountain		Water			X	X	X	1	Use Collision Cell
MW-20D (280-114377-5)	9/14/18	09:55 Mountain		Water			X	X	X	1	Use Collision Cell
MW-18EB (280-114377-6)	9/14/18	08:00 Mountain		Water			X	X	X	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 9-18-2018 1622	Company: TAden	Received by:	Date/Time: 9/19/18 920	Company: TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: BT

Cooler Received on 9/19/18 Opened on 9/19/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 4.5 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-114377-1

Login Number: 114377
List Number: 1
Creator: Lujan, Jacob P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-114377-1

Login Number: 114377
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 09/19/18 12:47 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114377-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-114377-1	MW-17	104
280-114377-2	MW-18	99.7
280-114377-4	MW-20	103
280-114377-5	MW-20D	105
280-114377-6	MW-18EB	106
LCS 160-390430/1-A	Lab Control Sample	102
LCSD 160-390430/2-A	Lab Control Sample Dup	104
MB 160-390430/23-A	Method Blank	105

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-114377-1	MW-17	104	88.2
280-114377-2	MW-18	99.7	88.6
280-114377-4	MW-20	103	89.7
280-114377-5	MW-20D	105	85.2
280-114377-6	MW-18EB	106	87.9
LCS 160-390509/1-A	Lab Control Sample	102	89.3
LCSD 160-390509/2-A	Lab Control Sample Dup	104	87.1
MB 160-390509/23-A	Method Blank	105	93.8

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-114500-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
10/19/2018 4:16:22 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Qualifiers

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC 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.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-114500-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-114500-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 9/19/2018 7:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

TOTAL RECOVERABLE METALS
Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/24/2018 and analyzed on 09/25/2018 and 09/26/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/24/2018 and analyzed on 10/02/2018, 10/04/2018 and 10/08/2018.

The continuing calibration verification (CCV) associated with batch 240-348338 recovered above the upper control limit for Beryllium. The samples associated with this CCV were less than the reporting limit for the affected analyte; therefore, the data have been qualified and reported. The following sample is impacted: MW-11 (280-114500-3).

The continuing calibration verification (CCV) associated with batch 240-348723 recovered above the upper control limit for Beryllium and Lithium. The samples associated with this CCV were less than the reporting limit for the affected analytes; therefore, the data have been qualified and reported. The following sample is impacted: MW-12 (280-114500-2).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY
Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 09/21/2018 and 09/27/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Job ID: 280-114500-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-19 (280-114500-1), MW-12 (280-114500-2) and MW-11 (280-114500-3) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/24/2018 and 09/28/2018.

The following sample was inadvertently analyzed four days past the seven day holding time: MW-12 (280-114500-2). The client was notified and instructed the laboratory to report the data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples MW-19 (280-114500-1), MW-12 (280-114500-2) and MW-11 (280-114500-3) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 09/20/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples MW-19 (280-114500-1), MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/26/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-19 (280-114500-1), MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/25/2018 and 10/02/2018.

Samples MW-19 (280-114500-1)[20X], MW-11 (280-114500-3)[5X] and MW-9 (280-114500-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Sulfate was detected in method blank MB 280-430880/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/24/2018 and analyzed on 10/16/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

The following samples were prepared at a reduced aliquot due to limited sample volume. MW-12 (280-114500-2) and MW-11 (280-114500-3)

Sample aliquot for 280-114500-4 was reduced due to potential matrix interference. Sample was brown, opaque, and contained heavy sediment levels. The bottle arrived expanded.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/24/2018 and analyzed on 10/01/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared

Job ID: 280-114500-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

instead to demonstrate batch precision.

The following samples were prepared at a reduced aliquot due to limited sample volume. MW-12 (280-114500-2) and MW-11 (280-114500-3)

Sample aliquot for 280-114500-4 was reduced due to potential matrix interference. Sample was brown, opaque, and contained heavy sediment levels. The bottle arrived expanded.

The detection goal was not met for the following sample due to the presence of matrix interferences and activity > MDC: MW-9 (280-114500-4). Analytical results are reported with the detection limit achieved.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-12 (280-114500-2), MW-11 (280-114500-3) and MW-9 (280-114500-4) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/18/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Client Sample ID: MW-19 — Lab Sample ID: 280-114500-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	8.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	35		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.94		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1000	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	370		13	3.4	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-12 — Lab Sample ID: 280-114500-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.2		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	99		5.0	0.31	mg/L	1		6010C	Total Recoverable
Arsenic	0.0084		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.15		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.00099	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.010		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.00052	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.0050	J ^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0080	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	34		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.95		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	67	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	660	H	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	16		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-11 — Lab Sample ID: 280-114500-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	220		5.0	0.31	mg/L	1		6010C	Total Recoverable
Arsenic	0.0076		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.17		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.018		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.014		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.027		0.010	0.0011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Client Sample ID: MW-11 (Continued) — Lab Sample ID: 280-114500-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	50		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	350		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-114500-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	10		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	470		5.0	0.31	mg/L	1		6010C	Total Recoverable
Antimony	0.00062	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0029	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.35		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0016		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00073	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.020		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0030		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.062		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.017		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.046		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000037	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	65		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	3.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	660	B	50	2.3	mg/L	10		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL DEN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-114500-1	MW-19	Water	09/17/18 14:25	09/19/18 07:35
280-114500-2	MW-12	Water	09/17/18 12:22	09/19/18 07:35
280-114500-3	MW-11	Water	09/17/18 16:15	09/19/18 07:35
280-114500-4	MW-9	Water	09/18/18 10:00	09/19/18 07:35

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**8.2**		0.10	0.023	mg/L		09/24/18 14:00	09/26/18 00:23	1
Calcium	**99**		5.0	0.31	mg/L		09/24/18 14:00	09/26/18 00:23	1

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**3.1**		0.10	0.023	mg/L		09/24/18 14:00	09/25/18 16:52	1
Calcium	**220**		5.0	0.31	mg/L		09/24/18 14:00	09/25/18 16:52	1

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**10**		0.10	0.023	mg/L		09/24/18 14:00	09/26/18 00:27	1
Calcium	**470**		5.0	0.31	mg/L		09/24/18 14:00	09/26/18 00:27	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/24/18 14:00	10/04/18 21:23	1
Arsenic	**0.0084**		0.0050	0.00075	mg/L		09/24/18 14:00	10/04/18 21:23	1
Barium	**0.15**		0.0050	0.0022	mg/L		09/24/18 14:00	10/04/18 21:23	1
Beryllium	ND	^	0.0010	0.00031	mg/L		09/24/18 14:00	10/04/18 21:23	1
Cadmium	ND		0.0010	0.00021	mg/L		09/24/18 14:00	10/04/18 21:23	1
Chromium	**0.00099**	**J**	0.0020	0.00098	mg/L		09/24/18 14:00	10/04/18 21:23	1
Cobalt	**0.010**		0.0010	0.00019	mg/L		09/24/18 14:00	10/04/18 21:23	1
Lead	**0.00052**	**J**	0.0010	0.00045	mg/L		09/24/18 14:00	10/04/18 21:23	1
Lithium	**0.0050**	**J ^**	0.0080	0.0017	mg/L		09/24/18 14:00	10/04/18 21:23	1
Molybdenum	**0.0080**	**J**	0.010	0.0011	mg/L		09/24/18 14:00	10/04/18 21:23	1
Selenium	ND		0.0050	0.00089	mg/L		09/24/18 14:00	10/04/18 21:23	1
Thallium	ND		0.0010	0.00020	mg/L		09/24/18 14:00	10/04/18 21:23	1

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/24/18 14:00	10/02/18 17:02	1
Arsenic	**0.0076**		0.0050	0.00075	mg/L		09/24/18 14:00	10/02/18 17:02	1
Barium	**0.17**		0.0050	0.0022	mg/L		09/24/18 14:00	10/02/18 17:02	1
Beryllium	ND	^	0.0010	0.00031	mg/L		09/24/18 14:00	10/02/18 17:02	1
Cadmium	ND		0.0010	0.00021	mg/L		09/24/18 14:00	10/02/18 17:02	1
Chromium	ND		0.0020	0.00098	mg/L		09/24/18 14:00	10/02/18 17:02	1
Cobalt	**0.018**		0.0010	0.00019	mg/L		09/24/18 14:00	10/02/18 17:02	1
Lead	ND		0.0010	0.00045	mg/L		09/24/18 14:00	10/02/18 17:02	1
Lithium	**0.014**		0.0080	0.0017	mg/L		09/24/18 14:00	10/02/18 17:02	1
Molybdenum	**0.027**		0.010	0.0011	mg/L		09/24/18 14:00	10/02/18 17:02	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.0050	0.00089	mg/L		09/24/18 14:00	10/02/18 17:02	1
Thallium	ND		0.0010	0.00020	mg/L		09/24/18 14:00	10/02/18 17:02	1

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00062**	**J**	0.0020	0.00057	mg/L		09/24/18 14:00	10/04/18 21:28	1
Arsenic	**0.0029**	**J**	0.0050	0.00075	mg/L		09/24/18 14:00	10/04/18 21:28	1
Barium	**0.35**		0.0050	0.0022	mg/L		09/24/18 14:00	10/04/18 21:28	1
Beryllium	**0.0016**		0.0010	0.00031	mg/L		09/24/18 14:00	10/08/18 12:17	1
Cadmium	**0.00073**	**J**	0.0010	0.00021	mg/L		09/24/18 14:00	10/04/18 21:28	1
Cobalt	**0.020**		0.0010	0.00019	mg/L		09/24/18 14:00	10/04/18 21:28	1
Chromium	**0.0030**		0.0020	0.00098	mg/L		09/24/18 14:00	10/04/18 21:28	1
Molybdenum	**0.062**		0.010	0.0011	mg/L		09/24/18 14:00	10/04/18 21:28	1
Lead	**0.017**		0.0010	0.00045	mg/L		09/24/18 14:00	10/04/18 21:28	1
Selenium	**0.0026**	**J**	0.0050	0.00089	mg/L		09/24/18 14:00	10/04/18 21:28	1
Thallium	ND		0.0010	0.00020	mg/L		09/24/18 14:00	10/04/18 21:28	1
Lithium	**0.046**		0.0080	0.0017	mg/L		09/24/18 14:00	10/08/18 12:17	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/21/18 11:40	09/21/18 17:58	1

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/27/18 11:05	09/27/18 16:35	1

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000037**	**J**	0.00020	0.000027	mg/L		09/21/18 11:40	09/21/18 18:01	1

General Chemistry

Client Sample ID: MW-19
Date Collected: 09/17/18 14:25
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**8.2**	**HF**	0.1	0.1	SU			09/26/18 06:46	1
Temperature	**17.7**	**HF**	1.0	1.0	Degrees C			09/26/18 06:46	1
Chloride	**35**		3.0	0.25	mg/L			09/25/18 20:23	1
Fluoride	**0.94**		0.50	0.060	mg/L			09/25/18 20:23	1
Sulfate	**1000**	**B**	100	4.6	mg/L			09/25/18 20:42	20

General Chemistry (Continued)

Client Sample ID: MW-19
Date Collected: 09/17/18 14:25
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L			09/24/18 08:04	1
Total Suspended Solids	370		13	3.4	mg/L			09/20/18 13:03	1

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			09/26/18 07:05	1
Temperature	17.4	HF	1.0	1.0	Degrees C			09/26/18 07:05	1
Chloride	34		3.0	0.25	mg/L			09/25/18 21:00	1
Fluoride	0.95		0.50	0.060	mg/L			09/25/18 21:00	1
Sulfate	67	B	5.0	0.23	mg/L			09/25/18 21:00	1
Total Dissolved Solids (TDS)	660	H	10	4.7	mg/L			09/28/18 08:37	1
Total Suspended Solids	16		4.0	1.1	mg/L			09/20/18 13:03	1

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			09/26/18 06:50	1
Temperature	17.6	HF	1.0	1.0	Degrees C			09/26/18 06:50	1
Chloride	50		3.0	0.25	mg/L			10/02/18 13:51	1
Fluoride	1.5		0.50	0.060	mg/L			10/02/18 13:51	1
Sulfate	350		25	1.2	mg/L			10/02/18 14:10	5
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			09/24/18 08:04	1
Total Suspended Solids	13		4.0	1.1	mg/L			09/20/18 13:03	1

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			09/26/18 06:42	1
Temperature	17.9	HF	1.0	1.0	Degrees C			09/26/18 06:42	1
Chloride	65		3.0	0.25	mg/L			09/25/18 21:38	1
Fluoride	3.2		0.50	0.060	mg/L			09/25/18 21:38	1
Sulfate	660	B	50	2.3	mg/L			09/25/18 21:57	10

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.320		0.0750	0.0803	1.00	0.0544	pCi/L	09/24/18 12:50	10/16/18 05:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*09/24/18 12:50*	*10/16/18 05:56*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.519		0.0945	0.105	1.00	0.0605	pCi/L	09/24/18 12:50	10/16/18 05:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*09/24/18 12:50*	*10/16/18 05:56*	*1*

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	9.46		0.723	1.12	1.00	0.249	pCi/L	09/24/18 12:50	10/16/18 05:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.4*		*40 - 110*	*09/24/18 12:50*	*10/16/18 05:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.371	U	0.255	0.257	1.00	0.396	pCi/L	09/24/18 13:32	10/01/18 10:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*
Y Carrier	*91.6*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.619		0.265	0.271	1.00	0.375	pCi/L	09/24/18 13:32	10/01/18 10:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*
Y Carrier	*89.3*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	11.0	G	1.71	1.98	1.00	1.70	pCi/L	09/24/18 13:32	10/01/18 10:50	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	*84.4*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*
Y Carrier	*81.9*		*40 - 110*	*09/24/18 13:32*	*10/01/18 10:50*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-12
Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.690**		0.266	0.269	5.00	0.396	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-11
Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.14**		0.281	0.291	5.00	0.375	pCi/L		10/18/18 09:44	1

Client Sample ID: MW-9
Date Collected: 09/18/18 10:00
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**20.4**		1.86	2.27	5.00	1.70	pCi/L		10/18/18 09:44	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-346863/1-A
Matrix: Water
Analysis Batch: 347083

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346863

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/24/18 14:00	09/25/18 16:01	1
Calcium	ND		5.0	0.31	mg/L		09/24/18 14:00	09/25/18 16:01	1

Lab Sample ID: LCS 240-346863/2-A
Matrix: Water
Analysis Batch: 347083

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346863

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.11		mg/L		111	80 - 120
Calcium	50.0	51.2		mg/L		102	80 - 120

Lab Sample ID: MB 240-346904/1-A
Matrix: Water
Analysis Batch: 347083

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/24/18 14:00	09/25/18 22:16	1
Calcium	ND		5.0	0.31	mg/L		09/24/18 14:00	09/25/18 22:16	1

Lab Sample ID: LCS 240-346904/2-A
Matrix: Water
Analysis Batch: 347083

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120
Calcium	50.0	50.4		mg/L		101	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-346863/1-A
Matrix: Water
Analysis Batch: 348338

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346863

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/24/18 14:00	10/02/18 16:01	1
Arsenic	ND		0.0050	0.00075	mg/L		09/24/18 14:00	10/02/18 16:01	1
Barium	ND		0.0050	0.0022	mg/L		09/24/18 14:00	10/02/18 16:01	1
Beryllium	ND		0.0010	0.00031	mg/L		09/24/18 14:00	10/02/18 16:01	1
Cadmium	ND		0.0010	0.00021	mg/L		09/24/18 14:00	10/02/18 16:01	1
Chromium	ND		0.0020	0.00098	mg/L		09/24/18 14:00	10/02/18 16:01	1
Cobalt	ND		0.0010	0.00019	mg/L		09/24/18 14:00	10/02/18 16:01	1
Lead	ND		0.0010	0.00045	mg/L		09/24/18 14:00	10/02/18 16:01	1
Molybdenum	ND		0.010	0.0011	mg/L		09/24/18 14:00	10/02/18 16:01	1
Selenium	ND		0.0050	0.00089	mg/L		09/24/18 14:00	10/02/18 16:01	1
Lithium	ND		0.0080	0.0017	mg/L		09/24/18 14:00	10/02/18 16:01	1
Thallium	ND		0.0010	0.00020	mg/L		09/24/18 14:00	10/02/18 16:01	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-346863/3-A
Matrix: Water
Analysis Batch: 348338

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346863

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.04		mg/L		104	80 - 120
Beryllium	1.00	1.10		mg/L		110	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Cobalt	1.00	0.974		mg/L		97	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Molybdenum	0.100	0.0991		mg/L		99	80 - 120
Selenium	1.00	1.04		mg/L		104	80 - 120
Lithium	0.100	0.102		mg/L		102	80 - 120
Thallium	0.250	0.250		mg/L		100	80 - 120

Lab Sample ID: MB 240-346904/1-A
Matrix: Water
Analysis Batch: 348723

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 346904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/24/18 14:00	10/04/18 19:20	1
Arsenic	ND		0.0050	0.00075	mg/L		09/24/18 14:00	10/04/18 19:20	1
Barium	ND		0.0050	0.0022	mg/L		09/24/18 14:00	10/04/18 19:20	1
Beryllium	ND		0.0010	0.00031	mg/L		09/24/18 14:00	10/04/18 19:20	1
Cadmium	ND		0.0010	0.00021	mg/L		09/24/18 14:00	10/04/18 19:20	1
Chromium	ND		0.0020	0.00098	mg/L		09/24/18 14:00	10/04/18 19:20	1
Cobalt	ND		0.0010	0.00019	mg/L		09/24/18 14:00	10/04/18 19:20	1
Lead	ND		0.0010	0.00045	mg/L		09/24/18 14:00	10/04/18 19:20	1
Molybdenum	ND		0.010	0.0011	mg/L		09/24/18 14:00	10/04/18 19:20	1
Selenium	ND		0.0050	0.00089	mg/L		09/24/18 14:00	10/04/18 19:20	1
Lithium	ND		0.0080	0.0017	mg/L		09/24/18 14:00	10/04/18 19:20	1
Thallium	ND		0.0010	0.00020	mg/L		09/24/18 14:00	10/04/18 19:20	1

Lab Sample ID: LCS 240-346904/3-A
Matrix: Water
Analysis Batch: 348723

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 346904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.105		mg/L		105	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Beryllium	1.00	1.09		mg/L		109	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	0.970		mg/L		97	80 - 120
Molybdenum	0.100	0.103		mg/L		103	80 - 120
Selenium	1.00	0.998		mg/L		100	80 - 120
Lithium	0.100	0.118		mg/L		118	80 - 120
Thallium	0.250	0.238		mg/L		95	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-430480/1-A
Matrix: Water
Analysis Batch: 430585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430480

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/21/18 11:40	09/21/18 17:34	1

Lab Sample ID: LCS 280-430480/2-A
Matrix: Water
Analysis Batch: 430585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430480

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00485		mg/L		97	84 - 120

Lab Sample ID: MB 280-431104/1-A
Matrix: Water
Analysis Batch: 431340

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 431104

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/27/18 11:05	09/27/18 15:33	1

Lab Sample ID: LCS 280-431104/2-A
Matrix: Water
Analysis Batch: 431340

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 431104

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00513		mg/L		103	84 - 120

Lab Sample ID: LCSD 280-431104/3-A
Matrix: Water
Analysis Batch: 431340

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 431104

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00515		mg/L		103	84 - 120	0	15

Method: 9040B - pH

Lab Sample ID: LCS 280-431056/4
Matrix: Water
Analysis Batch: 431056

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-430880/6
Matrix: Water
Analysis Batch: 430880

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/25/18 18:26	1
Fluoride	ND		0.50	0.060	mg/L			09/25/18 18:26	1
Sulfate	0.692	J	5.0	0.23	mg/L			09/25/18 18:26	1

Lab Sample ID: LCS 280-430880/4
Matrix: Water
Analysis Batch: 430880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.3		mg/L		99	90 - 110
Fluoride	5.00	5.14		mg/L		103	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-430880/5
Matrix: Water
Analysis Batch: 430880

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.3		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.14		mg/L		103	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-430880/3
Matrix: Water
Analysis Batch: 430880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.64	J	mg/L		106	50 - 150
Fluoride	0.200	0.192	J	mg/L		96	50 - 150
Sulfate	2.50	2.95	J	mg/L		118	50 - 150

Lab Sample ID: MB 280-431756/6
Matrix: Water
Analysis Batch: 431756

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/02/18 12:05	1
Fluoride	ND		0.50	0.060	mg/L			10/02/18 12:05	1
Sulfate	ND		5.0	0.23	mg/L			10/02/18 12:05	1

Lab Sample ID: LCS 280-431756/4
Matrix: Water
Analysis Batch: 431756

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.1		mg/L		99	90 - 110
Fluoride	5.00	5.09		mg/L		102	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-431756/5
Matrix: Water
Analysis Batch: 431756

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.1		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.08		mg/L		102	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-431756/3
Matrix: Water
Analysis Batch: 431756

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.48	J	mg/L		99	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	2.65	J	mg/L		106	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-430673/1
Matrix: Water
Analysis Batch: 430673

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/24/18 08:04	1

Lab Sample ID: LCS 280-430673/2
Matrix: Water
Analysis Batch: 430673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	498		mg/L		100	86 - 110

Lab Sample ID: 280-114500-3 DU
Matrix: Water
Analysis Batch: 430673

Client Sample ID: MW-11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	1400		1410		mg/L		0.6	10

Lab Sample ID: MB 280-431346/1
Matrix: Water
Analysis Batch: 431346

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/28/18 08:37	1

Lab Sample ID: LCS 280-431346/2
Matrix: Water
Analysis Batch: 431346

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	501		mg/L		100	86 - 110

Lab Sample ID: LCSD 280-431346/3
Matrix: Water
Analysis Batch: 431346

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	545		mg/L		109	86 - 110	8	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-430358/1
Matrix: Water
Analysis Batch: 430358

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			09/20/18 13:03	1

Lab Sample ID: LCS 280-430358/2
Matrix: Water
Analysis Batch: 430358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	89.2		mg/L		89	86 - 114

Lab Sample ID: LCSD 280-430358/3
Matrix: Water
Analysis Batch: 430358

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	98.4		mg/L		98	86 - 114	10	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-391007/19-A
Matrix: Water
Analysis Batch: 395369

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391007

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.06076	U	0.0633	0.0636	1.00	0.0933	pCi/L	09/24/18 12:50	10/16/18 05:56	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*09/24/18 12:50*	*10/16/18 05:56*	*1*

Lab Sample ID: LCS 160-391007/1-A
Matrix: Water
Analysis Batch: 395370

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391007

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.05		1.06	1.00	0.102	pCi/L	97	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Lab Sample ID: LCSD 160-391007/2-A
Matrix: Water
Analysis Batch: 395370

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 391007

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.88		1.05	1.00	0.0955	pCi/L	96	68 - 137	0.08	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-391007/2-A
Matrix: Water
Analysis Batch: 395370

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 391007

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	105		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-391012/19-A
Matrix: Water
Analysis Batch: 392219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391012

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2291	U	0.225	0.226	1.00	0.366	pCi/L	09/24/18 13:32	10/01/18 10:50	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	09/24/18 13:32	10/01/18 10:50	1
Y Carrier	80.4		40 - 110	09/24/18 13:32	10/01/18 10:50	1

Lab Sample ID: LCS 160-391012/1-A
Matrix: Water
Analysis Batch: 392220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391012

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			10.9	12.01		1.30	1.00	0.314	pCi/L	110	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	102		40 - 110
Y Carrier	84.5		40 - 110

Lab Sample ID: LCSD 160-391012/2-A
Matrix: Water
Analysis Batch: 392220

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 391012

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			10.9	11.32		1.22	1.00	0.281	pCi/L	103	56 - 140	0.27	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	105		40 - 110
Y Carrier	88.6		40 - 110

Metals

Prep Batch: 346863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-3	MW-11	Total Recoverable	Water	3005A	
MB 240-346863/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-346863/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-346863/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 346904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total Recoverable	Water	3005A	
280-114500-4	MW-9	Total Recoverable	Water	3005A	
MB 240-346904/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-346904/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-346904/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 347083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total Recoverable	Water	6010C	346904
280-114500-3	MW-11	Total Recoverable	Water	6010C	346863
280-114500-4	MW-9	Total Recoverable	Water	6010C	346904
MB 240-346863/1-A	Method Blank	Total Recoverable	Water	6010C	346863
MB 240-346904/1-A	Method Blank	Total Recoverable	Water	6010C	346904
LCS 240-346863/2-A	Lab Control Sample	Total Recoverable	Water	6010C	346863
LCS 240-346904/2-A	Lab Control Sample	Total Recoverable	Water	6010C	346904

Analysis Batch: 348338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-3	MW-11	Total Recoverable	Water	6020A	346863
MB 240-346863/1-A	Method Blank	Total Recoverable	Water	6020A	346863
LCS 240-346863/3-A	Lab Control Sample	Total Recoverable	Water	6020A	346863

Analysis Batch: 348723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total Recoverable	Water	6020A	346904
280-114500-4	MW-9	Total Recoverable	Water	6020A	346904
MB 240-346904/1-A	Method Blank	Total Recoverable	Water	6020A	346904
LCS 240-346904/3-A	Lab Control Sample	Total Recoverable	Water	6020A	346904

Analysis Batch: 349122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-4	MW-9	Total Recoverable	Water	6020A	346904

Prep Batch: 430480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total/NA	Water	7470A	
280-114500-4	MW-9	Total/NA	Water	7470A	
MB 280-430480/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-430480/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 430585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total/NA	Water	7470A	430480
280-114500-4	MW-9	Total/NA	Water	7470A	430480

Metals (Continued)

Analysis Batch: 430585 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-430480/1-A	Method Blank	Total/NA	Water	7470A	430480
LCS 280-430480/2-A	Lab Control Sample	Total/NA	Water	7470A	430480

Prep Batch: 431104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-3	MW-11	Total/NA	Water	7470A	
MB 280-431104/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-431104/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-431104/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 431340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-3	MW-11	Total/NA	Water	7470A	431104
MB 280-431104/1-A	Method Blank	Total/NA	Water	7470A	431104
LCS 280-431104/2-A	Lab Control Sample	Total/NA	Water	7470A	431104
LCSD 280-431104/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	431104

General Chemistry

Analysis Batch: 430358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-1	MW-19	Total/NA	Water	SM 2540D	
280-114500-2	MW-12	Total/NA	Water	SM 2540D	
280-114500-3	MW-11	Total/NA	Water	SM 2540D	
MB 280-430358/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-430358/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-430358/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 430673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-1	MW-19	Total/NA	Water	SM 2540C	
280-114500-3	MW-11	Total/NA	Water	SM 2540C	
MB 280-430673/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-430673/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-114500-3 DU	MW-11	Total/NA	Water	SM 2540C	

Analysis Batch: 430880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-1	MW-19	Total/NA	Water	9056A	
280-114500-1	MW-19	Total/NA	Water	9056A	
280-114500-2	MW-12	Total/NA	Water	9056A	
280-114500-4	MW-9	Total/NA	Water	9056A	
280-114500-4	MW-9	Total/NA	Water	9056A	
MB 280-430880/6	Method Blank	Total/NA	Water	9056A	
LCS 280-430880/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-430880/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-430880/3	Lab Control Sample	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 431056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-1	MW-19	Total/NA	Water	9040B	
280-114500-2	MW-12	Total/NA	Water	9040B	
280-114500-3	MW-11	Total/NA	Water	9040B	
280-114500-4	MW-9	Total/NA	Water	9040B	
LCS 280-431056/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 431346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total/NA	Water	SM 2540C	
MB 280-431346/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-431346/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-431346/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 431756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-3	MW-11	Total/NA	Water	9056A	
280-114500-3	MW-11	Total/NA	Water	9056A	
MB 280-431756/6	Method Blank	Total/NA	Water	9056A	
LCS 280-431756/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-431756/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-431756/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 391007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total/NA	Water	PrecSep-21	
280-114500-3	MW-11	Total/NA	Water	PrecSep-21	
280-114500-4	MW-9	Total/NA	Water	PrecSep-21	
MB 160-391007/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-391007/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-391007/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 391012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114500-2	MW-12	Total/NA	Water	PrecSep_0	
280-114500-3	MW-11	Total/NA	Water	PrecSep_0	
280-114500-4	MW-9	Total/NA	Water	PrecSep_0	
MB 160-391012/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-391012/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-391012/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Client Sample ID: MW-19

Date Collected: 09/17/18 14:25
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9040B		1			431056	09/26/18 06:46	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	430880	09/25/18 20:23	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	430880	09/25/18 20:42	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	430673	09/24/18 08:04	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	80 mL	250 mL	430358	09/20/18 13:03	JAP	TAL DEN

Client Sample ID: MW-12

Date Collected: 09/17/18 12:22
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346904	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			347083	09/26/18 00:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346904	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348723	10/04/18 21:23	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	430480	09/21/18 11:40	TEB	TAL DEN
Total/NA	Analysis	7470A		1			430585	09/21/18 17:58	TEB	TAL DEN
Total/NA	Analysis	9040B		1			431056	09/26/18 07:05	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	430880	09/25/18 21:00	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	431346	09/28/18 08:37	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430358	09/20/18 13:03	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.92 mL	1.0 g	391007	09/24/18 12:50	JLC	TAL SL
Total/NA	Analysis	9315		1			395369	10/16/18 05:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			749.92 mL	1.0 g	391012	09/24/18 13:32	JLC	TAL SL
Total/NA	Analysis	9320		1			392219	10/01/18 10:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Client Sample ID: MW-11

Date Collected: 09/17/18 16:15
Date Received: 09/19/18 07:35

Lab Sample ID: 280-114500-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346863	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			347083	09/25/18 16:52	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346863	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 17:02	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431104	09/27/18 11:05	THP	TAL DEN
Total/NA	Analysis	7470A		1			431340	09/27/18 16:35	THP	TAL DEN
Total/NA	Analysis	9040B		1			431056	09/26/18 06:50	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431756	10/02/18 13:51	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	431756	10/02/18 14:10	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	430673	09/24/18 08:04	VB	TAL DEN

Lab Chronicle

Client: HDR Inc
TestAmerica Job ID: 280-114500-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	430358	09/20/18 13:03	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.03 mL	1.0 g	391007	09/24/18 12:50	JLC	TAL SL
Total/NA	Analysis	9315		1			395369	10/16/18 05:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.03 mL	1.0 g	391012	09/24/18 13:32	JLC	TAL SL
Total/NA	Analysis	9320		1			392219	10/01/18 10:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Client Sample ID: MW-9
Lab Sample ID: 280-114500-4

Date Collected: 09/18/18 10:00
Matrix: Water
Date Received: 09/19/18 07:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	346904	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			347083	09/26/18 00:27	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346904	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348723	10/04/18 21:28	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	346904	09/24/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			349122	10/08/18 12:17	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	430480	09/21/18 11:40	TEB	TAL DEN
Total/NA	Analysis	7470A		1			430585	09/21/18 18:01	TEB	TAL DEN
Total/NA	Analysis	9040B		1			431056	09/26/18 06:42	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	430880	09/25/18 21:38	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	430880	09/25/18 21:57	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			249.90 mL	1.0 g	391007	09/24/18 12:50	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	395369	10/16/18 05:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			249.90 mL	1.0 g	391012	09/24/18 13:32	JLC	TAL SL
Total/NA	Analysis	9320		1			392219	10/01/18 10:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:44	ALS	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Water	Mercury
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-114500-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Tara Kent	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: ~~Anna Lundin~~ Molly Reaves	Phone: 7209337496	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	Analysis Requested	Preservation Codes:
City: Englewood	TAT Requested (days): Standard		A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2SO3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)
State, Zip: CO, 80112			
Phone: 720-633-2380(Tel)	PO #: DEN-001		Other:
Email: anna.lundin@hdrinc.com	WO #:		
Project Name: Xcel Energy GW CCR Monitoring - ~~Cherokee~~ Valmont	Project #: ~~28014374~~ 28014379		
Site: Colorado	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	2540C TDS / 2540D TSS combo	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D			
~~MW-4~~ TK MW-19	9-17-18	1425	G	Water	N	N			✓			✓		
~~MW-2~~ TK MW-12	9-17-18	1225	G	Water	N	N	✓	✓	✓	✓	✓			
~~MW-3~~ TK MW-11	9-17-18	1615	G	Water	N	N	✓	✓	✓	✓	✓			
~~MW-10~~ TK MW-9	9-18-18	1000	G	Water	N	N		✓	✓		✓			
~~MW-13~~				Water		N								
~~Field Duplicate~~ TK				Water		N								
~~Equipment Blank~~ TK				Water		N								

280-114500 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tara Kent	19 Sept 2018 0735	HDR		9-19-2018 0735	TAL-DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 5.0 & 0.5 by AP 9/19/18

10/19/2018

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

10/19/2018

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-455277.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114500-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/15/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X				X	
MW-12 (280-114500-2)	9/17/18	12:22 Mountain		Water			X	X	X	1	
MW-11 (280-114500-3)	9/17/18	16:15 Mountain		Water			X	X	X	1	
MW-9 (280-114500-4)	9/18/18	10:00 Mountain		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Diana Castro	Date/Time: 9-20-18 1600	Company TAKDen	Received by: Michael Hellle	Date/Time: 9.21.18 0910	Company TASLC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

3.6/4.5 2.8/C3.7 4.8/C5.7 2.6/C3.5
3.4/4.3 2.2/C3.1 5.0/C5.9 3.0/C3.9

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-455278.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114500-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/11/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	DST 9/20/18	560	Total Number of containers	Special Instructions/Note:
Preservation Code:													
MW-12 (280-114500-2)	9/17/18	12:22 Mountain		Water			X	X			500	1	Use Collision Cell
MW-11 (280-114500-3)	9/17/18	16:15 Mountain		Water			X	X	X		+	1	Use Collision Cell
MW-9 (280-114500-4)	9/18/18	10:00 Mountain		Water			X	X			250	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Diana Castro	9-20-18 1505	TAL Den	Jerry Burns	9/21/18 0930	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 280-114500**
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: Terry Burns

Cooler Received on 9/21/18 Opened on 9/22/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other Multiple

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

~~IR GUN# IR-8 (CF +0.9 °C)~~ Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

(IR GUN #36 (CF +0.6°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C)

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA	pH Strip Lot# HC849161
13. Were VOAs on the COC?	Yes No	
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA	
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes No	
16. Was a LL Hg or Me Hg trip blank present? _____	Yes No	

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: TB

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login # : 286-114500

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
TA	8	3.6	4.5	ICE
↓	↓	3.4	4.3	↓
		2.8	3.7	
		2.2	3.1	
		4.8	5.7	
		5.0	5.9	
		2.6	3.5	
⊥	⊥	3.0	3.9	⊥

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-114500-1

Login Number: 114500
List Number: 1
Creator: Paul, Amanda E

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-114500-1

Login Number: 114500
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 09/21/18 01:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-114500-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-114500-2	MW-12	107
280-114500-3	MW-11	108
280-114500-4	MW-9	84.4
LCS 160-391007/1-A	Lab Control Sample	102
LCSD 160-391007/2-A	Lab Control Sample Dup	105
MB 160-391007/19-A	Method Blank	106

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-114500-2	MW-12	107	91.6
280-114500-3	MW-11	108	89.3
280-114500-4	MW-9	84.4	81.9
LCS 160-391012/1-A	Lab Control Sample	102	84.5
LCSD 160-391012/2-A	Lab Control Sample Dup	105	88.6
MB 160-391012/19-A	Method Blank	106	80.4

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-115326-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Elizabeth M. Hoerchler

Authorized for release by:
11/13/2018 4:34:42 PM
Elizabeth Hoerchler, Project Manager I
elizabeth.hoerchler@testamericainc.com

Designee for

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
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.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-115326-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-115326-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/10/2018; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.0º C and 1.6º C.

Receipt Exceptions
Please note that two samples for MW-19 were received and recorded on the Chain of Custody: One set for Total and Dissolved metals, and another set for Anions/pH/TDS/TSS and Radium analysis. As these have separate dates and times of collection, these samples have been logged separately.

TOTAL RECOVERABLE METALS
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-19 (280-115326-5) and MW-20 (280-115326-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/15/2018 and analyzed on 10/17/2018 and 10/18/2018.

Calcium failed the recovery criteria low for the MSD of sample 240-102784-2 in batch 240-350595.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-19 (280-115326-5) and MW-20 (280-115326-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/15/2018 and analyzed on 10/17/2018 and 10/18/2018.

Selenium failed the recovery criteria low for the MS of sample 240-102784-2 in batch 240-350462.

Selenium failed the recovery criteria low for the MSD of sample 240-102784-2 in batch 240-350462.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-19 (280-115326-5) and MW-20 (280-115326-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared

Job ID: 280-115326-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

on 10/15/2018 and analyzed on 10/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 10/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 10/13/2018, 10/17/2018 and 11/02/2018.

The following sample in did not converge to constant pH after three measurements: MW-17EB (280-115326-3).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/27/2018, 10/29/2018, 10/31/2018 and 11/01/2018.

Sulfate was detected in method blank MB 280-435382/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Sulfate failed the recovery criteria high for the MS of sample 280-116342-4 in batch 280-435695.

Sulfate failed the recovery criteria high for the MSD of sample 280-116342-4 in batch 280-435695.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

The sample duplicate (DUP) precision for Fluoride analytical batch 280-435382 was outside control limits. Sample non-homogeneity is suspected.

The sample duplicate (DUP) precision for anion analytical batch 280-435695 was outside control limits for Fluoride. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 10/15/2018 and analyzed on 11/06/2018.

Job ID: 280-115326-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following samples in batch 160-395164 were prepared at a reduced aliquot due to potential matrix interference: MW-19 (280-115326-7). The sample was reduced due to discoloration and heavy sediment levels.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 10/15/2018 and analyzed on 10/26/2018.

The following samples in batch 160-395171 were prepared at a reduced aliquot due to potential matrix interference: MW-19 (280-115326-7). The sample was reduced due to discoloration and heavy sediment levels.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-17 (280-115326-1), MW-17D (280-115326-2), MW-17EB (280-115326-3), MW-18 (280-115326-4), MW-20 (280-115326-6) and MW-19 (280-115326-7) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 11/08/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115326-1	MW-17	Water	10/09/18 12:50	10/10/18 10:35
280-115326-2	MW-17D	Water	10/09/18 12:50	10/10/18 10:35
280-115326-3	MW-17EB	Water	10/09/18 13:20	10/10/18 10:35
280-115326-4	MW-18	Water	10/09/18 11:10	10/10/18 10:35
280-115326-5	MW-19	Water	10/09/18 14:55	10/10/18 10:35
280-115326-6	MW-20	Water	10/09/18 14:25	10/10/18 10:35
280-115326-7	MW-19	Water	10/10/18 08:35	10/10/18 10:35

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.58**		0.10	0.023	mg/L		10/15/18 14:00	10/17/18 23:44	1
Calcium	**52000**		5000	310	ug/L		10/15/18 14:00	10/17/18 23:44	1

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.54**		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 00:01	1
Calcium	**51000**		5000	310	ug/L		10/15/18 14:00	10/18/18 00:01	1

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 00:10	1
Calcium	ND		5000	310	ug/L		10/15/18 14:00	10/18/18 00:10	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.36**		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 00:19	1
Calcium	**40000**		5000	310	ug/L		10/15/18 14:00	10/18/18 00:19	1

Client Sample ID: MW-19
Date Collected: 10/09/18 14:55
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.1**		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 00:27	1
Calcium	**97000**		5000	310	ug/L		10/15/18 14:00	10/18/18 00:27	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.50**		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 00:36	1
Calcium	**55000**		5000	310	ug/L		10/15/18 14:00	10/18/18 00:36	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 00:06	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 00:06	1
Barium	**0.13**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 00:06	1
Beryllium	**0.0011**		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 17:48	1
Cadmium	**0.00030**	**J**	0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 00:06	1
Cobalt	**0.00081**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 00:06	1
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 00:06	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.0096**	**J**	0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 00:06	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 00:06	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 00:06	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 00:06	1
Lithium	**0.0072**	**J**	0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 17:48	1

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 00:24	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 00:24	1
Barium	**0.13**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 00:24	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 17:52	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 00:24	1
Cobalt	**0.00070**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 00:24	1
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 00:24	1
Molybdenum	**0.0090**	**J**	0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 00:24	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 00:24	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 00:24	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 00:24	1
Lithium	**0.0068**	**J**	0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 17:52	1

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 00:33	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 00:33	1
Barium	ND		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 00:33	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 18:01	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 00:33	1
Cobalt	ND		0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 00:33	1
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 00:33	1
Molybdenum	ND		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 00:33	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 00:33	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 00:33	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 00:33	1
Lithium	ND		0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 18:01	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00066**	**J**	0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 00:43	1
Arsenic	**0.0014**	**J**	0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 00:43	1
Barium	**0.041**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 00:43	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 18:06	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 00:43	1
Cobalt	**0.00061**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 00:43	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.0083**		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 00:43	1
Molybdenum	**0.031**		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 00:43	1
Lead	**0.00061**	**J**	0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 00:43	1
Selenium	**0.0010**	**J**	0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 00:43	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 00:43	1
Lithium	**0.033**		0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 18:06	1

Client Sample ID: MW-19
Date Collected: 10/09/18 14:55
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0028**		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 00:52	1
Arsenic	**0.0058**		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 00:52	1
Barium	**0.18**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 00:52	1
Beryllium	**0.00057**	**J**	0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 18:10	1
Cadmium	**0.00023**	**J**	0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 00:52	1
Cobalt	**0.0062**		0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 00:52	1
Chromium	**0.044**		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 00:52	1
Molybdenum	**0.075**		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 00:52	1
Lead	**0.010**		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 00:52	1
Selenium	**0.0041**	**J**	0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 00:52	1
Thallium	**0.00020**	**J**	0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 00:52	1
Lithium	**0.086**		0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 18:10	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 01:01	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 01:01	1
Barium	**0.019**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 01:01	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 18:14	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 01:01	1
Cobalt	**0.00020**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 01:01	1
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/17/18 01:01	1
Molybdenum	**0.024**		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 01:01	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 01:01	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 01:01	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 01:01	1
Lithium	**0.027**		0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 18:14	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:28	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:32	1

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:36	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:40	1

Client Sample ID: MW-19
Date Collected: 10/09/18 14:55
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:49	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:53	1

General Chemistry

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			10/13/18 16:27	1
Temperature	21.4	HF	1.0	1.0	Degrees C			10/13/18 16:27	1
Chloride	69		3.0	0.25	mg/L			10/27/18 12:47	1
Fluoride	1.3		0.50	0.060	mg/L			10/27/18 12:47	1
Sulfate	26		5.0	0.23	mg/L			10/27/18 12:47	1
Total Dissolved Solids (TDS)	370		10	4.7	mg/L			10/16/18 15:25	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			10/13/18 16:32	1
Temperature	21.2	HF	1.0	1.0	Degrees C			10/13/18 16:32	1
Chloride	70		3.0	0.25	mg/L			10/27/18 14:01	1
Fluoride	1.3		0.50	0.060	mg/L			10/27/18 14:01	1
Sulfate	28		5.0	0.23	mg/L			10/27/18 14:01	1
Total Dissolved Solids (TDS)	360		10	4.7	mg/L			10/16/18 15:25	1
Total Suspended Solids	6.4		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU			10/17/18 17:24	1
Temperature	23.3	HF	1.0	1.0	Degrees C			10/17/18 17:24	1
Chloride	ND		3.0	0.25	mg/L			10/27/18 14:20	1
Fluoride	ND		0.50	0.060	mg/L			10/27/18 14:20	1
Sulfate	0.27	J	5.0	0.23	mg/L			10/27/18 14:20	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/16/18 15:25	1
Total Suspended Solids	ND		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			10/13/18 16:50	1
Temperature	21.5	HF	1.0	1.0	Degrees C			10/13/18 16:50	1
Chloride	27		3.0	0.25	mg/L			10/27/18 14:39	1
Fluoride	2.5		0.50	0.060	mg/L			10/27/18 14:39	1
Sulfate	210	B	10	0.46	mg/L			10/29/18 19:42	2
Total Dissolved Solids (TDS)	680		10	4.7	mg/L			10/16/18 15:25	1
Total Suspended Solids	10		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			10/13/18 17:00	1
Temperature	21.4	HF	1.0	1.0	Degrees C			10/13/18 17:00	1
Chloride	78		3.0	0.25	mg/L			10/27/18 14:57	1
Fluoride	2.8		0.50	0.060	mg/L			10/27/18 14:57	1
Sulfate	190		5.0	0.23	mg/L			10/27/18 14:57	1
Total Dissolved Solids (TDS)	700		10	4.7	mg/L			10/16/18 15:25	1
Total Suspended Solids	13		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: MW-19
Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU			11/02/18 18:17	1
Temperature	21.5	HF	1.0	1.0	Degrees C			11/02/18 18:17	1
Chloride	36		3.0	0.25	mg/L			10/31/18 19:10	1
Fluoride	1.0		0.50	0.060	mg/L			11/01/18 01:59	1
Sulfate	ND		5.0	0.23	mg/L			11/01/18 01:59	1
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L			10/16/18 15:25	1
Total Suspended Solids	700		20	5.5	mg/L			10/16/18 13:05	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.248		0.0845	0.0874	1.00	0.0709	pCi/L	10/15/18 09:37	11/06/18 14:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	10/15/18 09:37	11/06/18 14:05	1

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.254		0.0864	0.0894	1.00	0.0830	pCi/L	10/15/18 09:37	11/06/18 14:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 09:37	11/06/18 14:05	1

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.253		0.0850	0.0880	1.00	0.0719	pCi/L	10/15/18 09:37	11/06/18 14:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 09:37	11/06/18 14:05	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217		0.0826	0.0849	1.00	0.0776	pCi/L	10/15/18 09:37	11/06/18 14:06	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	10/15/18 09:37	11/06/18 14:06	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.274		0.0902	0.0935	1.00	0.0803	pCi/L	10/15/18 09:37	11/06/18 14:06	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	10/15/18 09:37	11/06/18 14:06	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-19
Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.997		0.247	0.263	1.00	0.171	pCi/L	10/15/18 09:37	11/06/18 14:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*10/15/18 09:37*	*11/06/18 14:06*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.412		0.237	0.240	1.00	0.357	pCi/L	10/15/18 10:08	10/26/18 17:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:10*	*1*
Y Carrier	*86.4*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:10*	*1*

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.410		0.225	0.228	1.00	0.334	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*88.2*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0129	U	0.181	0.181	1.00	0.327	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*85.6*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.219	U	0.209	0.210	1.00	0.337	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*86.0*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.431**		0.247	0.250	1.00	0.374	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*85.2*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Client Sample ID: MW-19
Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.23**		0.572	0.583	1.00	0.830	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*84.5*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.660**		0.252	0.255	5.00	0.357	pCi/L		11/08/18 16:41	1

Client Sample ID: MW-17D
Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.665**		0.241	0.245	5.00	0.334	pCi/L		11/08/18 16:41	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17EB
Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35
Lab Sample ID: 280-115326-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.266	U	0.200	0.201	5.00	0.327	pCi/L		11/08/18 16:41	1

Client Sample ID: MW-18
Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35
Lab Sample ID: 280-115326-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.437**		0.225	0.227	5.00	0.337	pCi/L		11/08/18 16:41	1

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35
Lab Sample ID: 280-115326-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.705**		0.263	0.267	5.00	0.374	pCi/L		11/08/18 16:41	1

Client Sample ID: MW-19
Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35
Lab Sample ID: 280-115326-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**2.22**		0.623	0.640	5.00	0.830	pCi/L		11/08/18 16:41	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-350084/1-A
Matrix: Water
Analysis Batch: 350595

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/15/18 14:00	10/17/18 23:14	1
Calcium	ND		5000	310	ug/L		10/15/18 14:00	10/17/18 23:14	1

Lab Sample ID: LCS 240-350084/2-A
Matrix: Water
Analysis Batch: 350595

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120
Calcium	50000	52500		ug/L		105	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-350084/1-A
Matrix: Water
Analysis Batch: 350462

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/16/18 23:34	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/16/18 23:34	1
Barium	ND		0.0050	0.0022	mg/L		10/15/18 14:00	10/16/18 23:34	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/16/18 23:34	1
Cobalt	ND		0.0010	0.00019	mg/L		10/15/18 14:00	10/16/18 23:34	1
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/16/18 23:34	1
Molybdenum	ND		0.010	0.0011	mg/L		10/15/18 14:00	10/16/18 23:34	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/16/18 23:34	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/16/18 23:34	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/16/18 23:34	1

Lab Sample ID: MB 240-350084/1-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/18/18 17:34	1
Lithium	ND		0.0080	0.0017	mg/L		10/15/18 14:00	10/18/18 17:34	1

Lab Sample ID: LCS 240-350084/3-A
Matrix: Water
Analysis Batch: 350462

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0970		mg/L		97	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	0.923		mg/L		92	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	1.02		mg/L		102	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Molybdenum	0.100	0.0968		mg/L		97	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-350084/3-A
Matrix: Water
Analysis Batch: 350462

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.946		mg/L		95	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.240		mg/L		96	80 - 120

Lab Sample ID: LCS 240-350084/3-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	1.00	0.951		mg/L		95	80 - 120
Lithium	0.100	0.0858		mg/L		86	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-350085/1-A
Matrix: Water
Analysis Batch: 350504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 350085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/15/18 12:00	10/16/18 15:13	1

Lab Sample ID: LCS 240-350085/2-A
Matrix: Water
Analysis Batch: 350504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 350085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.99		ug/L		100	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-433427/31
Matrix: Water
Analysis Batch: 433427

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-433427/4
Matrix: Water
Analysis Batch: 433427

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9040B - pH (Continued)

Lab Sample ID: 280-115326-4 DU
Matrix: Water
Analysis Batch: 433427

Client Sample ID: MW-18
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH adj. to 25 deg C	8.0	HF		8.0		SU				0.5	5
Temperature	21.5	HF		21.8		Degrees C				1	10

Lab Sample ID: LCS 280-433929/29
Matrix: Water
Analysis Batch: 433929

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH adj. to 25 deg C			7.00	7.1		SU		101	99 - 101		

Lab Sample ID: LCS 280-436316/4
Matrix: Water
Analysis Batch: 436316

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH adj. to 25 deg C			7.00	7.0		SU		100	99 - 101		

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-435201/6
Matrix: Water
Analysis Batch: 435201

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/27/18 11:51	1
Fluoride	ND		0.50	0.060	mg/L			10/27/18 11:51	1
Sulfate	ND		5.0	0.23	mg/L			10/27/18 11:51	1

Lab Sample ID: LCS 280-435201/4
Matrix: Water
Analysis Batch: 435201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	100		mg/L		100	90 - 110		
Fluoride			5.00	5.04		mg/L		101	90 - 110		
Sulfate			100	102		mg/L		102	90 - 110		

Lab Sample ID: LCSD 280-435201/5
Matrix: Water
Analysis Batch: 435201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	100		mg/L		100	90 - 110	0	10
Fluoride			5.00	5.06		mg/L		101	90 - 110	0	10
Sulfate			100	102		mg/L		102	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-435201/3
Matrix: Water
Analysis Batch: 435201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.61	J	mg/L		105	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	2.71	J	mg/L		108	50 - 150

Lab Sample ID: 280-115326-1 MS
Matrix: Water
Analysis Batch: 435201

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	69		25.0	97.4		mg/L		112	80 - 120
Fluoride	1.3		5.00	6.26		mg/L		100	80 - 120
Sulfate	26		25.0	53.0		mg/L		107	80 - 120

Lab Sample ID: 280-115326-1 MSD
Matrix: Water
Analysis Batch: 435201

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	69		25.0	97.8		mg/L		114	80 - 120	0	20
Fluoride	1.3		5.00	6.35		mg/L		102	80 - 120	1	20
Sulfate	26		25.0	53.6		mg/L		109	80 - 120	1	20

Lab Sample ID: 280-115326-1 DU
Matrix: Water
Analysis Batch: 435201

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	69		69.6		mg/L		0.4	15
Fluoride	1.3		1.29		mg/L		2	15
Sulfate	26		26.8		mg/L		2	15

Lab Sample ID: MB 280-435382/6
Matrix: Water
Analysis Batch: 435382

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/29/18 17:06	1
Fluoride	ND		0.50	0.060	mg/L			10/29/18 17:06	1
Sulfate	0.251	J	5.0	0.23	mg/L			10/29/18 17:06	1

Lab Sample ID: LCS 280-435382/4
Matrix: Water
Analysis Batch: 435382

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	4.97		mg/L		99	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-435382/5
Matrix: Water
Analysis Batch: 435382

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	4.99		mg/L		100	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-435382/3
Matrix: Water
Analysis Batch: 435382

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.72	J	mg/L		109	50 - 150
Fluoride	0.200	0.177	J	mg/L		89	50 - 150
Sulfate	2.50	2.72	J	mg/L		109	50 - 150

Lab Sample ID: MB 280-435695/6
Matrix: Water
Analysis Batch: 435695

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/31/18 12:25	1
Fluoride	ND		0.50	0.060	mg/L			10/31/18 12:25	1
Sulfate	ND		5.0	0.23	mg/L			10/31/18 12:25	1

Lab Sample ID: LCS 280-435695/4
Matrix: Water
Analysis Batch: 435695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	5.17		mg/L		103	90 - 110
Sulfate	100	97.4		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-435695/5
Matrix: Water
Analysis Batch: 435695

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	5.17		mg/L		103	90 - 110	0	10
Sulfate	100	96.2		mg/L		96	90 - 110	1	10

Lab Sample ID: MRL 280-435695/3
Matrix: Water
Analysis Batch: 435695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.59	J	mg/L		104	50 - 150
Fluoride	0.200	0.175	J	mg/L		88	50 - 150
Sulfate	2.50	2.72	J	mg/L		109	50 - 150

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 280-435702/6
Matrix: Water
Analysis Batch: 435702

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/31/18 12:18	1
Fluoride	ND	^	0.50	0.060	mg/L			10/31/18 12:18	1

Lab Sample ID: LCS 280-435702/4
Matrix: Water
Analysis Batch: 435702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	106		mg/L		106	90 - 110

Lab Sample ID: LCSD 280-435702/5
Matrix: Water
Analysis Batch: 435702

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	106		mg/L		106	90 - 110	0	10

Lab Sample ID: MRL 280-435702/3
Matrix: Water
Analysis Batch: 435702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.48	J	mg/L		99	50 - 150
Fluoride	0.200	0.228	J	mg/L		114	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-433645/1
Matrix: Water
Analysis Batch: 433645

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/16/18 15:25	1

Lab Sample ID: LCS 280-433645/2
Matrix: Water
Analysis Batch: 433645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	506		mg/L		101	86 - 110

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-433624/1
Matrix: Water
Analysis Batch: 433624

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			10/16/18 13:05	1

Lab Sample ID: LCS 280-433624/2
Matrix: Water
Analysis Batch: 433624

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	105		mg/L		105	86 - 114		

Lab Sample ID: 280-115326-1 DU
Matrix: Water
Analysis Batch: 433624

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	4.4			4.80		mg/L				9	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-395164/23-A
Matrix: Water
Analysis Batch: 399571

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395164

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1729		0.0722	0.0738	1.00	0.0664	pCi/L	10/15/18 09:37	11/06/18 14:06	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*10/15/18 09:37*	*11/06/18 14:06*	*1*

Lab Sample ID: LCS 160-395164/1-A
Matrix: Water
Analysis Batch: 399571

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395164

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.51		1.07	1.00	0.0919	pCi/L	93	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-395171/23-A
Matrix: Water
Analysis Batch: 397458

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395171

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1044	U	0.176	0.176	1.00	0.299	pCi/L	10/15/18 10:08	10/26/18 17:11	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*
Y Carrier	*87.9*		*40 - 110*	*10/15/18 10:08*	*10/26/18 17:11*	*1*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-395171/1-A
Matrix: Water
Analysis Batch: 397458

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395171

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.28	9.355		1.08	1.00	0.393	pCi/L	101	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*84.1*		*40 - 110*

Metals

Prep Batch: 350084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total Recoverable	Water	3005A	
280-115326-2	MW-17D	Total Recoverable	Water	3005A	
280-115326-3	MW-17EB	Total Recoverable	Water	3005A	
280-115326-4	MW-18	Total Recoverable	Water	3005A	
280-115326-5	MW-19	Total Recoverable	Water	3005A	
280-115326-6	MW-20	Total Recoverable	Water	3005A	
MB 240-350084/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350084/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-350084/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 350085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	7470A	
280-115326-2	MW-17D	Total/NA	Water	7470A	
280-115326-3	MW-17EB	Total/NA	Water	7470A	
280-115326-4	MW-18	Total/NA	Water	7470A	
280-115326-5	MW-19	Total/NA	Water	7470A	
280-115326-6	MW-20	Total/NA	Water	7470A	
MB 240-350085/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-350085/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 350462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total Recoverable	Water	6020A	350084
280-115326-2	MW-17D	Total Recoverable	Water	6020A	350084
280-115326-3	MW-17EB	Total Recoverable	Water	6020A	350084
280-115326-4	MW-18	Total Recoverable	Water	6020A	350084
280-115326-5	MW-19	Total Recoverable	Water	6020A	350084
280-115326-6	MW-20	Total Recoverable	Water	6020A	350084
MB 240-350084/1-A	Method Blank	Total Recoverable	Water	6020A	350084
LCS 240-350084/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350084

Analysis Batch: 350504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	7470A	350085
280-115326-2	MW-17D	Total/NA	Water	7470A	350085
280-115326-3	MW-17EB	Total/NA	Water	7470A	350085
280-115326-4	MW-18	Total/NA	Water	7470A	350085
280-115326-5	MW-19	Total/NA	Water	7470A	350085
280-115326-6	MW-20	Total/NA	Water	7470A	350085
MB 240-350085/1-A	Method Blank	Total/NA	Water	7470A	350085
LCS 240-350085/2-A	Lab Control Sample	Total/NA	Water	7470A	350085

Analysis Batch: 350595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total Recoverable	Water	6010C	350084
280-115326-2	MW-17D	Total Recoverable	Water	6010C	350084
280-115326-3	MW-17EB	Total Recoverable	Water	6010C	350084
280-115326-4	MW-18	Total Recoverable	Water	6010C	350084
280-115326-5	MW-19	Total Recoverable	Water	6010C	350084
280-115326-6	MW-20	Total Recoverable	Water	6010C	350084

Metals (Continued)

Analysis Batch: 350595 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-350084/1-A	Method Blank	Total Recoverable	Water	6010C	350084
LCS 240-350084/2-A	Lab Control Sample	Total Recoverable	Water	6010C	350084

Analysis Batch: 350851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total Recoverable	Water	6020A	350084
280-115326-2	MW-17D	Total Recoverable	Water	6020A	350084
280-115326-3	MW-17EB	Total Recoverable	Water	6020A	350084
280-115326-4	MW-18	Total Recoverable	Water	6020A	350084
280-115326-5	MW-19	Total Recoverable	Water	6020A	350084
280-115326-6	MW-20	Total Recoverable	Water	6020A	350084
MB 240-350084/1-A	Method Blank	Total Recoverable	Water	6020A	350084
LCS 240-350084/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350084

General Chemistry

Analysis Batch: 433427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	9040B	
280-115326-2	MW-17D	Total/NA	Water	9040B	
280-115326-4	MW-18	Total/NA	Water	9040B	
280-115326-6	MW-20	Total/NA	Water	9040B	
LCS 280-433427/31	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-433427/4	Lab Control Sample	Total/NA	Water	9040B	
280-115326-4 DU	MW-18	Total/NA	Water	9040B	

Analysis Batch: 433624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	SM 2540D	
280-115326-2	MW-17D	Total/NA	Water	SM 2540D	
280-115326-3	MW-17EB	Total/NA	Water	SM 2540D	
280-115326-4	MW-18	Total/NA	Water	SM 2540D	
280-115326-6	MW-20	Total/NA	Water	SM 2540D	
280-115326-7	MW-19	Total/NA	Water	SM 2540D	
MB 280-433624/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-433624/2	Lab Control Sample	Total/NA	Water	SM 2540D	
280-115326-1 DU	MW-17	Total/NA	Water	SM 2540D	

Analysis Batch: 433645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	SM 2540C	
280-115326-2	MW-17D	Total/NA	Water	SM 2540C	
280-115326-3	MW-17EB	Total/NA	Water	SM 2540C	
280-115326-4	MW-18	Total/NA	Water	SM 2540C	
280-115326-6	MW-20	Total/NA	Water	SM 2540C	
280-115326-7	MW-19	Total/NA	Water	SM 2540C	
MB 280-433645/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-433645/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 433929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-3	MW-17EB	Total/NA	Water	9040B	
LCS 280-433929/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 435201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	9056A	
280-115326-2	MW-17D	Total/NA	Water	9056A	
280-115326-3	MW-17EB	Total/NA	Water	9056A	
280-115326-4	MW-18	Total/NA	Water	9056A	
280-115326-6	MW-20	Total/NA	Water	9056A	
MB 280-435201/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435201/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435201/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435201/3	Lab Control Sample	Total/NA	Water	9056A	
280-115326-1 MS	MW-17	Total/NA	Water	9056A	
280-115326-1 MSD	MW-17	Total/NA	Water	9056A	
280-115326-1 DU	MW-17	Total/NA	Water	9056A	

Analysis Batch: 435382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-4	MW-18	Total/NA	Water	9056A	
MB 280-435382/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435382/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435382/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435382/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 435695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-7	MW-19	Total/NA	Water	9056A	
MB 280-435695/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435695/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435695/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435695/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 435702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-7	MW-19	Total/NA	Water	9056A	
MB 280-435702/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435702/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435702/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435702/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 436316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-7	MW-19	Total/NA	Water	9040B	
LCS 280-436316/4	Lab Control Sample	Total/NA	Water	9040B	

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Rad

Prep Batch: 395164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	PrecSep-21	
280-115326-2	MW-17D	Total/NA	Water	PrecSep-21	
280-115326-3	MW-17EB	Total/NA	Water	PrecSep-21	
280-115326-4	MW-18	Total/NA	Water	PrecSep-21	
280-115326-6	MW-20	Total/NA	Water	PrecSep-21	
280-115326-7	MW-19	Total/NA	Water	PrecSep-21	
MB 160-395164/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-395164/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 395171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115326-1	MW-17	Total/NA	Water	PrecSep_0	
280-115326-2	MW-17D	Total/NA	Water	PrecSep_0	
280-115326-3	MW-17EB	Total/NA	Water	PrecSep_0	
280-115326-4	MW-18	Total/NA	Water	PrecSep_0	
280-115326-6	MW-20	Total/NA	Water	PrecSep_0	
280-115326-7	MW-19	Total/NA	Water	PrecSep_0	
MB 160-395171/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-395171/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Client Sample ID: MW-17

Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/17/18 23:44	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 00:06	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 17:48	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:28	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433427	10/13/18 16:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/27/18 12:47	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.47 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:05	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.47 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:10	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: MW-17D

Date Collected: 10/09/18 12:50
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 00:01	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 00:24	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 17:52	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:32	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433427	10/13/18 16:32	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/27/18 14:01	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.37 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:05	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.37 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:11	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: MW-17EB

Date Collected: 10/09/18 13:20
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 00:10	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 00:33	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 18:01	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:36	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 17:24	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/27/18 14:20	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.76 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:05	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.76 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:11	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: MW-18

Date Collected: 10/09/18 11:10
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 00:19	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 00:43	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 18:06	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:40	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433427	10/13/18 16:50	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/27/18 14:39	ARM	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435382	10/29/18 19:42	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.78 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.78 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:11	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Client Sample ID: MW-19
Date Collected: 10/09/18 14:55
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 00:27	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 00:52	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 18:10	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:49	AJC	TAL CAN

Client Sample ID: MW-20
Date Collected: 10/09/18 14:25
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 00:36	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350462	10/17/18 01:01	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350084	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 18:14	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350085	10/15/18 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350504	10/16/18 15:53	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433427	10/13/18 17:00	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/27/18 14:57	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.99 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.99 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:11	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: MW-19
Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9040B		1			436316	11/02/18 18:17	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435702	10/31/18 19:10	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435695	11/01/18 01:59	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	433645	10/16/18 15:25	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Client Sample ID: MW-19

Date Collected: 10/10/18 08:35
Date Received: 10/10/18 10:35

Lab Sample ID: 280-115326-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			500.25 mL	1.0 g	395164	10/15/18 09:37	JLC	TAL SL
Total/NA	Analysis	9315		1			399571	11/06/18 14:06	CDR	TAL SL
Total/NA	Prep	PrecSep_0			500.25 mL	1.0 g	395171	10/15/18 10:08	JLC	TAL SL
Total/NA	Analysis	9320		1			397458	10/26/18 17:11	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-115326-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client: HDR, Inc	Project Manager: Matt Rohr	Date: 10/10/18	Chain of Custody Number: 152671
Address: 9781 S Meridian Blvd Ste 400	Telephone Number (Area Code)/Fax Number: (303) 764-1537	Lab Number:	Page 1 of 1
City: Englewood; State: CO; Zip Code: 80112	Site Contact: Emily Manor 7202733-1346; Lab Contact: Stephanie Rothmeyer		
Project Name and Location (State): Xcel - Valmont (CO)	Carrier/Waybill Number: Hand Carry		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

280-115326 Chain of Custody

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Metals total	Anions/pH	TDS/TSS	Ra 226/228	Special Instructions/ Conditions of Receipt
MW-17	10/9/18	1250		X			3		4				X	X	X	X	
MW-17D	10/9/18	1250		X			3		4				X	X	X	X	
MW-17EB	10/9/18	1320		X			3		4				X	X	X	X	
MW-18	10/9/18	1110		X			3		4				X	X	X	X	
MW-19	10/9/18	1455		X					~~2~~ 1				X			~~X~~	Metals only, 1,500ml HNO3
MW-20	10/9/18	1425		X			3		4				X	X	X	X	
MW-19	10/10/18	0835		X			1		1					X	X	X	1L unpres 700ml HNO3

Done 10/10

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other per contract

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	10/10/18	1035	1. Received By: [signature]	10/10/18	1035
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: Contact Molly Reeves if volume insufficient for analyses 0.3°C, 0.9°C IR#9 CF 0.7

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
HDR, Inc	Matt Rohr	10/10/18	180770
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
9781 S Meridian Blvd Ste 400	(303) 764-1537		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Englewood / CO / 80112	Emily Munoz 720 273 3436	Stephanie Rothwell	
Project Name and Location (State)	**Carrier/Waybill Number**		
Xcel-Valmont (CO)	Hand Carry		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): Metals, Dissolved
MW-17	10/9/18	1250		X					1				X
MW-17D	10/9/18	1250		X					1				X
MW-17EB	10/9/18	1320		X					1				X
MW-18	10/9/18	1110		X					1				X
MW-19	10/9/18	1455		X					1				X
MW-20	10/9/18	1425		X					1				X

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other per contract

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	10/10/18	1035	1. Received By	10/10/18	1035
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-457876.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-115326-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/5/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-115326-1)	10/9/18	12:50 Mountain		Water			X	X	X	2	
MW-17D (280-115326-2)	10/9/18	12:50 Mountain		Water			X	X	X	2	
MW-17EB (280-115326-3)	10/9/18	13:20 Mountain		Water			X	X	X	2	
MW-18 (280-115326-4)	10/9/18	11:10 Mountain		Water			X	X	X	2	
MW-20 (280-115326-6)	10/9/18	14:25 Mountain		Water			X	X	X	2	
MW-19 (280-115326-7)	10/9/18	08:35 Mountain		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*			***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*		
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 10-11-2018 1608	Company: TA Den	Received by: [signature]	Date/Time: 10/12/18 0850	Company: TA STL
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-457876.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-115326-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/5/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-115326-1)	10/9/18	12:50 Mountain		Water			X	X	X	2	
MW-17D (280-115326-2)	10/9/18	12:50 Mountain		Water			X	X	X	2	
MW-17EB (280-115326-3)	10/9/18	13:20 Mountain		Water			X	X	X	2	
MW-18 (280-115326-4)	10/9/18	11:10 Mountain		Water			X	X	X	2	
MW-20 (280-115326-6)	10/9/18	14:25 Mountain		Water			X	X	X	2	
MW-19 (280-115326-7)	10/9/18	08:35 Mountain		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10/9/2018 1605	TAL Den		10/12/18 0850	TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-457878.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-115326-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 11/1/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

SH

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron and Calcium	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-115326-1)	10/9/18	12:50 Mountain		Water			X	X	X	2	Use Collision Cell
MW-17D (280-115326-2)	10/9/18	12:50 Mountain		Water			X	X	X	2	Use Collision Cell
MW-17EB (280-115326-3)	10/9/18	13:20 Mountain		Water			X	X	X	2	Use Collision Cell
MW-18 (280-115326-4)	10/9/18	11:10 Mountain		Water			X	X	X	2	Use Collision Cell
MW-19 (280-115326-5)	10/9/18	14:55 Mountain		Water			X	X	X	2	Use Collision Cell
MW-20 (280-115326-6)	10/9/18	14:25 Mountain		Water			X	X	X	2	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 10/9/2018 1252	Company:	Received by:	Date/Time: 10/10/18 930	Company: TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: SBC
Cooler Received on 10/12/18 Opened on 10/12/18
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 119 Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 11.5 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes (No)
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? (Yes) No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-115326-1

Login Number: 115326
List Number: 1
Creator: Rhoades, Joseph P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Not present
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-115326-1

Login Number: 115326
List Number: 2
Creator: Dupart, Lacee S

List Source: TestAmerica St. Louis
List Creation: 10/12/18 12:47 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-115326-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-115326-1	MW-17	102
280-115326-2	MW-17D	101
280-115326-3	MW-17EB	101
280-115326-4	MW-18	99.7
280-115326-6	MW-20	105
280-115326-7	MW-19	90.3
LCS 160-395164/1-A	Lab Control Sample	102
MB 160-395164/23-A	Method Blank	103

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-115326-1	MW-17	102	86.4
280-115326-2	MW-17D	101	88.2
280-115326-3	MW-17EB	101	85.6
280-115326-4	MW-18	99.7	86.0
280-115326-6	MW-20	105	85.2
280-115326-7	MW-19	90.3	84.5
LCS 160-395171/1-A	Lab Control Sample	102	84.1
MB 160-395171/23-A	Method Blank	103	87.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-116391-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Valmont

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by:
11/30/2018 4:32:32 PM
Dylan Bieniulis, Project Manager I
dylan.bieniulis@testamericainc.com

Designee for

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Qualifiers

Metals

Qualifier	Qualifier Description
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.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-116391-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Valmont

Report Number: 280-116391-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 10/31/2018 10:37 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.8º C and 1.0º C.

The requested Total and Dissolved Metals analyses were subcontracted to TestAmerica's Canton laboratory. Dissolved metals analyses are reported under a separate job series, 280-116931-2.

The requested Radiological analyses were subcontracted to TestAmerica's St.Louis laboratory.

The client was notified on 11/1/18.

TOTAL RECOVERABLE METALS

Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/05/2018 and analyzed on 11/07/2018.

Calcium failed the recovery criteria low for the MS of sample MW-17MS (280-116391-1) in batch 240-353870. Calcium failed the recovery criteria low for the MSD of sample MW-17MSD (280-116391-1) in batch 240-353870. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/05/2018 and analyzed on 11/06/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 11/05/2018 and analyzed on 11/06/2018.

Job ID: 280-116391-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/01/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/02/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/21/2018 and 11/23/2018.

The following sample did not converge to constant pH after three measurements: MW-17EB (280-116391-6). The result was reported per SOP.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 11/21/2018 and 11/23/2018.

Samples MW-18 (280-116391-2)[5X] and MW-19 (280-116391-3)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/05/2018 and analyzed on 11/27/2018.

Radium-226 was detected in method blank MB 160-399444/22-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The following sample was prepared at a reduced aliquot due to potential matrix interference. Sample was reduced due to discoloration and heavy sediment levels: MW-19 (280-116391-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228
Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/05/2018 and analyzed on 11/21/2018.

Job ID: 280-116391-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Radium-228 was detected in method blank MB 160-399455/22-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The following sample was prepared at a reduced aliquot due to potential matrix interference. Sample was reduced due to discoloration and heavy sediment levels: MW-19 (280-116391-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-17 (280-116391-1), MW-18 (280-116391-2), MW-19 (280-116391-3), MW-20 (280-116391-4), MW-17D (280-116391-5) and MW-17EB (280-116391-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 11/30/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Client Sample ID: MW-17 — Lab Sample ID: 280-116391-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.54		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	50000	F1	5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.13		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00025	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00079	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.0075	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0091	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	70		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	27		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	370		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	8.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-18 — Lab Sample ID: 280-116391-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.34		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	37000		5000	310	ug/L	1		6010C	Total Recoverable
Antimony	0.00072	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0017	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.040		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00032	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Chromium	0.0038		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00034	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.00065	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.028		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.00097	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	28		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.6		0.50	0.060	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-18 (Continued) — Lab Sample ID: 280-116391-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	210		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	690		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	20		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-19 — Lab Sample ID: 280-116391-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	93000		5000	310	ug/L	1		6010C	Total Recoverable
Antimony	0.0028		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0048	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.15		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00060	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00022	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Chromium	0.024		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.0048		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.013		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.092		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.064		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0038	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	34		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.96		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1000		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	220		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 280-116391-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.55		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	55000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.019		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Lithium	0.025		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.021		0.010	0.0011	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-20 (Continued) — Lab Sample ID: 280-116391-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	21.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	83		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	2.7		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	200		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	540		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17D — Lab Sample ID: 280-116391-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.51		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	44000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00047	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.0074	J	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0086	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	70		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	28		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	520		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-17EB — Lab Sample ID: 280-116391-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116391-1	MW-17	Water	10/30/18 12:35	10/31/18 10:37
280-116391-2	MW-18	Water	10/30/18 14:20	10/31/18 10:37
280-116391-3	MW-19	Water	10/31/18 08:50	10/31/18 10:37
280-116391-4	MW-20	Water	10/30/18 15:50	10/31/18 10:37
280-116391-5	MW-17D	Water	10/30/18 12:35	10/31/18 10:37
280-116391-6	MW-17EB	Water	10/30/18 12:55	10/31/18 10:37

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.54**		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 16:32	1
Calcium	**50000**	**F1**	5000	310	ug/L		11/05/18 14:00	11/07/18 00:17	1

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.34**		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 16:54	1
Calcium	**37000**		5000	310	ug/L		11/05/18 14:00	11/07/18 00:42	1

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.1**		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 00:59	1
Calcium	**93000**		5000	310	ug/L		11/05/18 14:00	11/07/18 00:59	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.55**		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 01:08	1
Calcium	**55000**		5000	310	ug/L		11/05/18 14:00	11/07/18 01:08	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.51**		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 01:17	1
Calcium	**44000**		5000	310	ug/L		11/05/18 14:00	11/07/18 01:17	1

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 01:25	1
Calcium	ND		5000	310	ug/L		11/05/18 14:00	11/07/18 01:25	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 12:17	1
Arsenic	ND		0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 12:17	1
Barium	**0.13**		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 12:17	1
Beryllium	ND		0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 12:17	1
Cadmium	**0.00025**	**J**	0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 12:17	1
Chromium	**0.0013**	**J**	0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 12:17	1
Cobalt	**0.00079**	**J**	0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 12:17	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 12:17	1
Lithium	**0.0075**	**J**	0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 12:17	1
Molybdenum	**0.0091**	**J**	0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 12:17	1
Selenium	ND		0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 12:17	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 12:17	1

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00072**	**J**	0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 12:45	1
Arsenic	**0.0017**	**J**	0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 12:45	1
Barium	**0.040**		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 12:45	1
Beryllium	**0.00032**	**J**	0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 12:45	1
Cadmium	ND		0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 12:45	1
Chromium	**0.0038**		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 12:45	1
Cobalt	**0.00034**	**J**	0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 12:45	1
Lead	**0.00065**	**J**	0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 12:45	1
Lithium	**0.037**		0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 12:45	1
Molybdenum	**0.028**		0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 12:45	1
Selenium	**0.00097**	**J**	0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 12:45	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 12:45	1

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0028**		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 13:03	1
Arsenic	**0.0048**	**J**	0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 13:03	1
Barium	**0.15**		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 13:03	1
Beryllium	**0.00060**	**J**	0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 13:03	1
Cadmium	**0.00022**	**J**	0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 13:03	1
Chromium	**0.024**		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 13:03	1
Cobalt	**0.0048**		0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 13:03	1
Lead	**0.013**		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 13:03	1
Lithium	**0.092**		0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 13:03	1
Molybdenum	**0.064**		0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 13:03	1
Selenium	**0.0038**	**J**	0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 13:03	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 13:03	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 13:12	1
Arsenic	ND		0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 13:12	1
Barium	**0.019**		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 13:12	1
Beryllium	ND		0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 13:12	1
Cadmium	ND		0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 13:12	1
Chromium	ND		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 13:12	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 13:12	1
Lead	ND		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 13:12	1
Lithium	**0.025**		0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 13:12	1
Molybdenum	**0.021**		0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 13:12	1
Selenium	ND		0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 13:12	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 13:12	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 13:21	1
Arsenic	ND		0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 13:21	1
Barium	**0.12**		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 13:21	1
Beryllium	ND		0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 13:21	1
Cadmium	ND		0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 13:21	1
Chromium	ND		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 13:21	1
Cobalt	**0.00047**	**J**	0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 13:21	1
Lead	ND		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 13:21	1
Lithium	**0.0074**	**J**	0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 13:21	1
Molybdenum	**0.0086**	**J**	0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 13:21	1
Selenium	ND		0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 13:21	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 13:21	1

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 13:31	1
Arsenic	ND		0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 13:31	1
Barium	ND		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 13:31	1
Beryllium	ND		0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 13:31	1
Cadmium	ND		0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 13:31	1
Chromium	ND		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 13:31	1
Cobalt	ND		0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 13:31	1
Lead	ND		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 13:31	1
Lithium	ND		0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 13:31	1
Molybdenum	ND		0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 13:31	1
Selenium	ND		0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 13:31	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 13:31	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 13:56	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 14:10	1

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 14:14	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 14:18	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 14:22	1

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 14:30	1

General Chemistry

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			11/21/18 10:09	1
Temperature	21.9	HF	1.0	1.0	Degrees C			11/21/18 10:09	1
Chloride	70		3.0	0.25	mg/L			11/21/18 02:37	1
Fluoride	1.3		0.50	0.060	mg/L			11/21/18 02:37	1
Sulfate	27		5.0	0.23	mg/L			11/21/18 02:37	1
Total Dissolved Solids (TDS)	370		10	4.7	mg/L			11/01/18 09:49	1
Total Suspended Solids	8.0		4.0	1.1	mg/L			11/02/18 09:46	1

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU			11/21/18 12:07	1
Temperature	23.1	HF	1.0	1.0	Degrees C			11/21/18 12:07	1
Chloride	28		3.0	0.25	mg/L			11/21/18 02:56	1
Fluoride	2.6		0.50	0.060	mg/L			11/21/18 02:56	1
Sulfate	210		25	1.2	mg/L			11/23/18 18:54	5
Total Dissolved Solids (TDS)	690		10	4.7	mg/L			11/01/18 09:49	1
Total Suspended Solids	20		4.0	1.1	mg/L			11/02/18 09:46	1

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			11/21/18 10:28	1
Temperature	21.1	HF	1.0	1.0	Degrees C			11/21/18 10:28	1
Chloride	34		3.0	0.25	mg/L			11/21/18 03:14	1
Fluoride	0.96		0.50	0.060	mg/L			11/21/18 03:14	1
Sulfate	1000		50	2.3	mg/L			11/23/18 19:11	10
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L			11/01/18 09:49	1
Total Suspended Solids	220		4.0	1.1	mg/L			11/02/18 09:46	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			11/21/18 10:32	1
Temperature	21.5	HF	1.0	1.0	Degrees C			11/21/18 10:32	1
Chloride	83		3.0	0.25	mg/L			11/21/18 04:11	1
Fluoride	2.7		0.50	0.060	mg/L			11/21/18 04:11	1
Sulfate	200		5.0	0.23	mg/L			11/21/18 04:11	1
Total Dissolved Solids (TDS)	540		10	4.7	mg/L			11/01/18 09:49	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/02/18 09:46	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			11/21/18 10:36	1
Temperature	21.0	HF	1.0	1.0	Degrees C			11/21/18 10:36	1
Chloride	70		3.0	0.25	mg/L			11/21/18 04:29	1
Fluoride	1.3		0.50	0.060	mg/L			11/21/18 04:29	1
Sulfate	28		5.0	0.23	mg/L			11/21/18 04:29	1
Total Dissolved Solids (TDS)	520		10	4.7	mg/L			11/01/18 09:49	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			11/02/18 09:46	1

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU			11/23/18 15:08	1
Temperature	21.7	HF	1.0	1.0	Degrees C			11/23/18 15:08	1
Chloride	ND		3.0	0.25	mg/L			11/21/18 04:48	1
Fluoride	ND		0.50	0.060	mg/L			11/21/18 04:48	1
Sulfate	ND		5.0	0.23	mg/L			11/21/18 04:48	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/01/18 09:49	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/02/18 09:46	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.396		0.114	0.119	1.00	0.0778	pCi/L	11/05/18 11:46	11/27/18 05:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	11/05/18 11:46	11/27/18 05:51	1

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.430		0.126	0.132	1.00	0.0895	pCi/L	11/05/18 11:46	11/27/18 05:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.0		40 - 110	11/05/18 11:46	11/27/18 05:51	1

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.04		0.286	0.301	1.00	0.174	pCi/L	11/05/18 11:46	11/27/18 05:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	82.3		40 - 110	11/05/18 11:46	11/27/18 05:51	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.296		0.105	0.109	1.00	0.0982	pCi/L	11/05/18 11:46	11/27/18 05:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	11/05/18 11:46	11/27/18 05:51	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.253		0.104	0.106	1.00	0.102	pCi/L	11/05/18 11:46	11/27/18 05:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110	11/05/18 11:46	11/27/18 05:51	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.154		0.0811	0.0823	1.00	0.0946	pCi/L	11/05/18 11:46	11/27/18 05:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*11/05/18 11:46*	*11/27/18 05:52*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.386		0.222	0.225	1.00	0.335	pCi/L	11/05/18 13:19	11/21/18 11:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:25*	*1*
Y Carrier	*88.2*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:25*	*1*

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.754		0.286	0.294	1.00	0.393	pCi/L	11/05/18 13:19	11/21/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:26*	*1*
Y Carrier	*84.9*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:26*	*1*

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.02		0.639	0.666	1.00	0.817	pCi/L	11/05/18 13:19	11/21/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.3*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:26*	*1*
Y Carrier	*83.4*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:26*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.131	U	0.216	0.216	1.00	0.364	pCi/L	11/05/18 13:19	11/21/18 11:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:28*	*1*
Y Carrier	*81.9*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:28*	*1*

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.534**		0.267	0.271	1.00	0.392	pCi/L	11/05/18 13:19	11/21/18 11:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:28*	*1*
Y Carrier	*82.2*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:28*	*1*

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0574	U	0.197	0.197	1.00	0.365	pCi/L	11/05/18 13:19	11/21/18 11:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:29*	*1*
Y Carrier	*82.2*		*40 - 110*	*11/05/18 13:19*	*11/21/18 11:29*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-17
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.781**		0.250	0.255	5.00	0.335	pCi/L		11/30/18 11:32	1

Client Sample ID: MW-18
Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.18**		0.313	0.322	5.00	0.393	pCi/L		11/30/18 11:32	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-19
Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37
Lab Sample ID: 280-116391-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**3.06**		0.700	0.731	5.00	0.817	pCi/L		11/30/18 11:32	1

Client Sample ID: MW-20
Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37
Lab Sample ID: 280-116391-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.427**		0.240	0.242	5.00	0.364	pCi/L		11/30/18 11:32	1

Client Sample ID: MW-17D
Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37
Lab Sample ID: 280-116391-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.787**		0.287	0.291	5.00	0.392	pCi/L		11/30/18 11:32	1

Client Sample ID: MW-17EB
Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37
Lab Sample ID: 280-116391-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0969	U	0.213	0.214	5.00	0.365	pCi/L		11/30/18 11:32	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-353681/1-A
Matrix: Water
Analysis Batch: 353870

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		5000	310	ug/L		11/05/18 14:00	11/07/18 00:08	1

Lab Sample ID: MB 240-353681/1-A
Matrix: Water
Analysis Batch: 354314

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/05/18 14:00	11/07/18 16:24	1

Lab Sample ID: LCS 240-353681/2-A
Matrix: Water
Analysis Batch: 353870

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	50000	48000		ug/L		96	80 - 120

Lab Sample ID: LCS 240-353681/2-A
Matrix: Water
Analysis Batch: 354314

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.07		mg/L		107	80 - 120

Lab Sample ID: 280-116391-1 MS
Matrix: Water
Analysis Batch: 353870

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	50000	F1	50000	87000	F1	ug/L		74	75 - 125

Lab Sample ID: 280-116391-1 MS
Matrix: Water
Analysis Batch: 354314

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.54		1.00	1.50		mg/L		96	75 - 125

Lab Sample ID: 280-116391-1 MSD
Matrix: Water
Analysis Batch: 353870

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	50000	F1	50000	86500	F1	ug/L		73	75 - 125	1	20

Lab Sample ID: 280-116391-1 MSD
Matrix: Water
Analysis Batch: 354314

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.54		1.00	1.50		mg/L		96	75 - 125	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-353681/1-A
Matrix: Water
Analysis Batch: 354112

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/05/18 14:00	11/06/18 12:08	1
Arsenic	ND		0.0050	0.00075	mg/L		11/05/18 14:00	11/06/18 12:08	1
Barium	ND		0.0050	0.0022	mg/L		11/05/18 14:00	11/06/18 12:08	1
Beryllium	ND		0.0010	0.00031	mg/L		11/05/18 14:00	11/06/18 12:08	1
Cadmium	ND		0.0010	0.00021	mg/L		11/05/18 14:00	11/06/18 12:08	1
Chromium	ND		0.0020	0.00098	mg/L		11/05/18 14:00	11/06/18 12:08	1
Cobalt	ND		0.0010	0.00019	mg/L		11/05/18 14:00	11/06/18 12:08	1
Lead	ND		0.0010	0.00045	mg/L		11/05/18 14:00	11/06/18 12:08	1
Lithium	ND		0.0080	0.0017	mg/L		11/05/18 14:00	11/06/18 12:08	1
Molybdenum	ND		0.010	0.0011	mg/L		11/05/18 14:00	11/06/18 12:08	1
Selenium	ND		0.0050	0.00089	mg/L		11/05/18 14:00	11/06/18 12:08	1
Thallium	ND		0.0010	0.00020	mg/L		11/05/18 14:00	11/06/18 12:08	1

Lab Sample ID: LCS 240-353681/3-A
Matrix: Water
Analysis Batch: 354112

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0983		mg/L		98	80 - 120
Arsenic	1.00	0.973		mg/L		97	80 - 120
Barium	1.00	0.989		mg/L		99	80 - 120
Beryllium	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.03		mg/L		103	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	1.06		mg/L		106	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Lithium	0.100	0.0968		mg/L		97	80 - 120
Molybdenum	0.100	0.0999		mg/L		100	80 - 120
Selenium	1.00	1.00		mg/L		100	80 - 120
Thallium	0.250	0.252		mg/L		101	80 - 120

Lab Sample ID: 280-116391-1 MS
Matrix: Water
Analysis Batch: 354112

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0851		mg/L		85	75 - 125
Arsenic	ND		1.00	0.862		mg/L		86	75 - 125
Barium	0.13		1.00	0.968		mg/L		84	75 - 125
Beryllium	ND		1.00	0.914		mg/L		91	75 - 125
Cadmium	0.00025	J	1.00	0.879		mg/L		88	75 - 125
Chromium	0.0013	J	1.00	0.867		mg/L		87	75 - 125
Cobalt	0.00079	J	1.00	0.887		mg/L		89	75 - 125
Lead	ND		1.00	0.882		mg/L		88	75 - 125
Lithium	0.0075	J	0.100	0.0927		mg/L		85	75 - 125
Molybdenum	0.0091	J	0.100	0.0957		mg/L		87	75 - 125
Selenium	ND		1.00	0.855		mg/L		85	75 - 125
Thallium	ND		0.250	0.215		mg/L		86	75 - 125

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-116391-1 MSD
Matrix: Water
Analysis Batch: 354112

Client Sample ID: MW-17
Prep Type: Total Recoverable
Prep Batch: 353681

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0922		mg/L		92	75 - 125	8	20
Arsenic	ND		1.00	0.947		mg/L		95	75 - 125	9	20
Barium	0.13		1.00	1.05		mg/L		92	75 - 125	8	20
Beryllium	ND		1.00	0.968		mg/L		97	75 - 125	6	20
Cadmium	0.00025	J	1.00	0.951		mg/L		95	75 - 125	8	20
Chromium	0.0013	J	1.00	0.941		mg/L		94	75 - 125	8	20
Cobalt	0.00079	J	1.00	0.970		mg/L		97	75 - 125	9	20
Lead	ND		1.00	0.960		mg/L		96	75 - 125	8	20
Lithium	0.0075	J	0.100	0.0983		mg/L		91	75 - 125	6	20
Molybdenum	0.0091	J	0.100	0.106		mg/L		97	75 - 125	10	20
Selenium	ND		1.00	0.938		mg/L		94	75 - 125	9	20
Thallium	ND		0.250	0.233		mg/L		93	75 - 125	8	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-353682/1-A
Matrix: Water
Analysis Batch: 354068

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 353682

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/05/18 14:00	11/06/18 13:52	1

Lab Sample ID: LCS 240-353682/2-A
Matrix: Water
Analysis Batch: 354068

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 353682

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.92		ug/L		98	80 - 120

Lab Sample ID: 280-116391-1 MS
Matrix: Water
Analysis Batch: 354068

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 353682

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	1.05		ug/L		105	80 - 120

Lab Sample ID: 280-116391-1 MSD
Matrix: Water
Analysis Batch: 354068

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 353682

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	0.980		ug/L		98	80 - 120	7	20

Method: 9040B - pH

Lab Sample ID: LCS 280-438453/30
Matrix: Water
Analysis Batch: 438453

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 280-438453/4
Matrix: Water
Analysis Batch: 438453

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: 280-116391-1 DU
Matrix: Water
Analysis Batch: 438453

Client Sample ID: MW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	8.0	HF	8.0		SU		0.1	5
Temperature	21.9	HF	20.8		Degrees C		5	10

Lab Sample ID: 280-116391-2 DU
Matrix: Water
Analysis Batch: 438453

Client Sample ID: MW-18
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	8.1	HF	8.1		SU		0.1	5
Temperature	23.1	HF	23.1		Degrees C		0.2	10

Lab Sample ID: LCS 280-438618/4
Matrix: Water
Analysis Batch: 438618

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-438268/6
Matrix: Water
Analysis Batch: 438268

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			11/20/18 12:05	1
Fluoride	ND		0.50	0.060	mg/L			11/20/18 12:05	1
Sulfate	ND		5.0	0.23	mg/L			11/20/18 12:05	1

Lab Sample ID: LCS 280-438268/4
Matrix: Water
Analysis Batch: 438268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.2		mg/L		98	90 - 110

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-438268/4
Matrix: Water
Analysis Batch: 438268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	5.28		mg/L		106	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-438268/5
Matrix: Water
Analysis Batch: 438268

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.3		mg/L		98	90 - 110	0	10
Fluoride	5.00	5.28		mg/L		106	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-438268/3
Matrix: Water
Analysis Batch: 438268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.42	J	mg/L		97	50 - 150
Fluoride	0.200	0.216	J	mg/L		108	50 - 150
Sulfate	2.50	2.81	J	mg/L		113	50 - 150

Lab Sample ID: MB 280-438579/6
Matrix: Water
Analysis Batch: 438579

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			11/23/18 12:18	1

Lab Sample ID: LCS 280-438579/4
Matrix: Water
Analysis Batch: 438579

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-438579/5
Matrix: Water
Analysis Batch: 438579

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-438579/3
Matrix: Water
Analysis Batch: 438579

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	2.39	J	mg/L		96	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-435867/1
Matrix: Water
Analysis Batch: 435867

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/01/18 09:49	1

Lab Sample ID: LCS 280-435867/2
Matrix: Water
Analysis Batch: 435867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	493		mg/L		98	86 - 110

Lab Sample ID: LCSD 280-435867/3
Matrix: Water
Analysis Batch: 435867

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	494		mg/L		99	86 - 110	0	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-436039/1
Matrix: Water
Analysis Batch: 436039

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			11/02/18 09:46	1

Lab Sample ID: LCS 280-436039/2
Matrix: Water
Analysis Batch: 436039

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.4		mg/L		92	86 - 114

Lab Sample ID: LCSD 280-436039/3
Matrix: Water
Analysis Batch: 436039

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	93.2		mg/L		93	86 - 114	1	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-399444/22-A
Matrix: Water
Analysis Batch: 402736

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399444

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2014		0.0884	0.0903	1.00	0.0887	pCi/L	11/05/18 11:46	11/27/18 05:53	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: MB 160-399444/22-A
Matrix: Water
Analysis Batch: 402736

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399444

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110	11/05/18 11:46	11/27/18 05:53	1

Lab Sample ID: LCS 160-399444/1-A
Matrix: Water
Analysis Batch: 402735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399444

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	11.12		1.17	1.00	0.108	pCi/L	98	68 - 137		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	100		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-399455/22-A
Matrix: Water
Analysis Batch: 402011

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399455

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.4870		0.244	0.248	1.00	0.357	pCi/L	11/05/18 13:19	11/21/18 11:29	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110	11/05/18 13:19	11/21/18 11:29	1
Y Carrier	82.6		40 - 110	11/05/18 13:19	11/21/18 11:29	1

Lab Sample ID: LCS 160-399455/1-A
Matrix: Water
Analysis Batch: 402132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399455

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.20	9.250		1.06	1.00	0.355	pCi/L	101	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	100		40 - 110
Y Carrier	84.5		40 - 110

Metals

Prep Batch: 353681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total Recoverable	Water	3005A	
280-116391-2	MW-18	Total Recoverable	Water	3005A	
280-116391-3	MW-19	Total Recoverable	Water	3005A	
280-116391-4	MW-20	Total Recoverable	Water	3005A	
280-116391-5	MW-17D	Total Recoverable	Water	3005A	
280-116391-6	MW-17EB	Total Recoverable	Water	3005A	
MB 240-353681/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-353681/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-353681/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-116391-1 MS	MW-17	Total Recoverable	Water	3005A	
280-116391-1 MS	MW-17	Total Recoverable	Water	3005A	
280-116391-1 MSD	MW-17	Total Recoverable	Water	3005A	
280-116391-1 MSD	MW-17	Total Recoverable	Water	3005A	

Prep Batch: 353682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	7470A	
280-116391-2	MW-18	Total/NA	Water	7470A	
280-116391-3	MW-19	Total/NA	Water	7470A	
280-116391-4	MW-20	Total/NA	Water	7470A	
280-116391-5	MW-17D	Total/NA	Water	7470A	
280-116391-6	MW-17EB	Total/NA	Water	7470A	
MB 240-353682/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-353682/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-116391-1 MS	MW-17	Total/NA	Water	7470A	
280-116391-1 MSD	MW-17	Total/NA	Water	7470A	

Analysis Batch: 353870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total Recoverable	Water	6010C	353681
280-116391-2	MW-18	Total Recoverable	Water	6010C	353681
280-116391-3	MW-19	Total Recoverable	Water	6010C	353681
280-116391-4	MW-20	Total Recoverable	Water	6010C	353681
280-116391-5	MW-17D	Total Recoverable	Water	6010C	353681
280-116391-6	MW-17EB	Total Recoverable	Water	6010C	353681
MB 240-353681/1-A	Method Blank	Total Recoverable	Water	6010C	353681
LCS 240-353681/2-A	Lab Control Sample	Total Recoverable	Water	6010C	353681
280-116391-1 MS	MW-17	Total Recoverable	Water	6010C	353681
280-116391-1 MSD	MW-17	Total Recoverable	Water	6010C	353681

Analysis Batch: 354068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	7470A	353682
280-116391-2	MW-18	Total/NA	Water	7470A	353682
280-116391-3	MW-19	Total/NA	Water	7470A	353682
280-116391-4	MW-20	Total/NA	Water	7470A	353682
280-116391-5	MW-17D	Total/NA	Water	7470A	353682
280-116391-6	MW-17EB	Total/NA	Water	7470A	353682
MB 240-353682/1-A	Method Blank	Total/NA	Water	7470A	353682
LCS 240-353682/2-A	Lab Control Sample	Total/NA	Water	7470A	353682
280-116391-1 MS	MW-17	Total/NA	Water	7470A	353682

Metals (Continued)

Analysis Batch: 354068 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1 MSD	MW-17	Total/NA	Water	7470A	353682

Analysis Batch: 354112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total Recoverable	Water	6020A	353681
280-116391-2	MW-18	Total Recoverable	Water	6020A	353681
280-116391-3	MW-19	Total Recoverable	Water	6020A	353681
280-116391-4	MW-20	Total Recoverable	Water	6020A	353681
280-116391-5	MW-17D	Total Recoverable	Water	6020A	353681
280-116391-6	MW-17EB	Total Recoverable	Water	6020A	353681
MB 240-353681/1-A	Method Blank	Total Recoverable	Water	6020A	353681
LCS 240-353681/3-A	Lab Control Sample	Total Recoverable	Water	6020A	353681
280-116391-1 MS	MW-17	Total Recoverable	Water	6020A	353681
280-116391-1 MSD	MW-17	Total Recoverable	Water	6020A	353681

Analysis Batch: 354314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total Recoverable	Water	6010C	353681
280-116391-2	MW-18	Total Recoverable	Water	6010C	353681
MB 240-353681/1-A	Method Blank	Total Recoverable	Water	6010C	353681
LCS 240-353681/2-A	Lab Control Sample	Total Recoverable	Water	6010C	353681
280-116391-1 MS	MW-17	Total Recoverable	Water	6010C	353681
280-116391-1 MSD	MW-17	Total Recoverable	Water	6010C	353681

General Chemistry

Analysis Batch: 435867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	SM 2540C	
280-116391-2	MW-18	Total/NA	Water	SM 2540C	
280-116391-3	MW-19	Total/NA	Water	SM 2540C	
280-116391-4	MW-20	Total/NA	Water	SM 2540C	
280-116391-5	MW-17D	Total/NA	Water	SM 2540C	
280-116391-6	MW-17EB	Total/NA	Water	SM 2540C	
MB 280-435867/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-435867/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-435867/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 436039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	SM 2540D	
280-116391-2	MW-18	Total/NA	Water	SM 2540D	
280-116391-3	MW-19	Total/NA	Water	SM 2540D	
280-116391-4	MW-20	Total/NA	Water	SM 2540D	
280-116391-5	MW-17D	Total/NA	Water	SM 2540D	
280-116391-6	MW-17EB	Total/NA	Water	SM 2540D	
MB 280-436039/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-436039/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-436039/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 438268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	9056A	
280-116391-2	MW-18	Total/NA	Water	9056A	
280-116391-3	MW-19	Total/NA	Water	9056A	
280-116391-4	MW-20	Total/NA	Water	9056A	
280-116391-5	MW-17D	Total/NA	Water	9056A	
280-116391-6	MW-17EB	Total/NA	Water	9056A	
MB 280-438268/6	Method Blank	Total/NA	Water	9056A	
LCS 280-438268/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-438268/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-438268/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 438453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	9040B	
280-116391-2	MW-18	Total/NA	Water	9040B	
280-116391-3	MW-19	Total/NA	Water	9040B	
280-116391-4	MW-20	Total/NA	Water	9040B	
280-116391-5	MW-17D	Total/NA	Water	9040B	
LCS 280-438453/30	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-438453/4	Lab Control Sample	Total/NA	Water	9040B	
280-116391-1 DU	MW-17	Total/NA	Water	9040B	
280-116391-2 DU	MW-18	Total/NA	Water	9040B	

Analysis Batch: 438579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-2	MW-18	Total/NA	Water	9056A	
280-116391-3	MW-19	Total/NA	Water	9056A	
MB 280-438579/6	Method Blank	Total/NA	Water	9056A	
LCS 280-438579/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-438579/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-438579/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 438618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-6	MW-17EB	Total/NA	Water	9040B	
LCS 280-438618/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 399444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	PrecSep-21	
280-116391-2	MW-18	Total/NA	Water	PrecSep-21	
280-116391-3	MW-19	Total/NA	Water	PrecSep-21	
280-116391-4	MW-20	Total/NA	Water	PrecSep-21	
280-116391-5	MW-17D	Total/NA	Water	PrecSep-21	
280-116391-6	MW-17EB	Total/NA	Water	PrecSep-21	
MB 160-399444/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-399444/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 399455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116391-1	MW-17	Total/NA	Water	PrecSep_0	
280-116391-2	MW-18	Total/NA	Water	PrecSep_0	
280-116391-3	MW-19	Total/NA	Water	PrecSep_0	
280-116391-4	MW-20	Total/NA	Water	PrecSep_0	
280-116391-5	MW-17D	Total/NA	Water	PrecSep_0	
280-116391-6	MW-17EB	Total/NA	Water	PrecSep_0	
MB 160-399455/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-399455/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Client Sample ID: MW-17

Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 00:17	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			354314	11/07/18 16:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 12:17	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 13:56	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438453	11/21/18 10:09	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 02:37	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.89 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:51	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.89 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402132	11/21/18 11:25	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Client Sample ID: MW-18

Date Collected: 10/30/18 14:20
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 00:42	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			354314	11/07/18 16:54	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 12:45	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 14:10	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438453	11/21/18 12:07	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	438579	11/23/18 18:54	TLP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 02:56	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.70 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:51	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.70 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402132	11/21/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Client Sample ID: MW-19

Date Collected: 10/31/18 08:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 00:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 13:03	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 14:14	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438453	11/21/18 10:28	SGB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	438579	11/23/18 19:11	TLP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 03:14	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			499.79 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:51	CDR	TAL SL
Total/NA	Prep	PrecSep_0			499.79 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402132	11/21/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Client Sample ID: MW-20

Date Collected: 10/30/18 15:50
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 01:08	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 13:12	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 14:18	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438453	11/21/18 10:32	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 04:11	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.16 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:51	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402011	11/21/18 11:28	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Client Sample ID: MW-17D

Date Collected: 10/30/18 12:35
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 01:17	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 13:21	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 14:22	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438453	11/21/18 10:36	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 04:29	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.86 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:51	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.86 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402011	11/21/18 11:28	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Client Sample ID: MW-17EB

Date Collected: 10/30/18 12:55
Date Received: 10/31/18 10:37

Lab Sample ID: 280-116391-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			353870	11/07/18 01:25	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	353681	11/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			354112	11/06/18 13:31	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	353682	11/05/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			354068	11/06/18 14:30	AJC	TAL CAN
Total/NA	Analysis	9040B		1			438618	11/23/18 15:08	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438268	11/21/18 04:48	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	435867	11/01/18 09:49	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	436039	11/02/18 09:46	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.87 mL	1.0 g	399444	11/05/18 11:46	JLC	TAL SL
Total/NA	Analysis	9315		1			402736	11/27/18 05:52	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.87 mL	1.0 g	399455	11/05/18 13:19	JLC	TAL SL
Total/NA	Analysis	9320		1			402011	11/21/18 11:29	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			403608	11/30/18 11:32	RTM	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-116391-1
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
(303) 736-0100

Chain of Custody Record

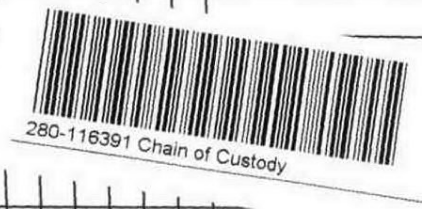
TestAmericc
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: Emily Muñoz

TestAmerica Laboratories, Inc

Client Contact	Project Manager: Matt Rohr	Site Contact: ~~Nick Hanrahan~~	Date: 10/31/18	COC No: HDR 10311801
HDR Inc	Tel/Fax: 303-764-537	Lab Contact: Darlene Brady	Carrier: Hand-Carry	1 of 1 COCs
1670 Broadway, Suite 3400	**Analysis Turnaround Time**			Sampler:
Denver, CO 80202	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(907) 644-2078 Phone	TAT if different from Below _____			Walk-in Client:
Matt.Rohr@hdrinc.com Email	☐ 2 weeks			Lab Sampling:
Project Name: Xcel Energy GW CCR	☐ 1 week			
Site: VALMONT	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total Dissolved Solids	Total Suspendid Solids	pH, Fluoride, Chloride, Sulfate	Ra226/Ra228 combined	App III - Total Metals: Calcium, Boron	App IV Total Metals (see list)	App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, F
MW-17	10/30/18	1235	G	W	6	N	N	x	x	x	x	x	x	
MW-18	10/30/18	1420	G	W	6	N	N	x	x	x	x	x	x	
MW-19	10/31/18	0850	G	W	3	N	N	x	x	x	x	x	x	
MW-20	10/30/18	1550	G	W	6	N	N	x	x	x	x	x	x	
MW-17D ~~DUP~~	10/30/18	1235	G	W	6	N	N	x	x	x	x	x	x	
MW-17EB ~~EB~~	10/30/18	1255	G	W	6	N	N	x	x	x	x	x	x	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Contact Molly Reeves for priority analyses if volume insufficient for all analyses requested.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 0.3, 0.0	Corr'd: 1.0, 0.8	Therm ID No.: IR8
Relinquished by:	Company: HDR	Date/Time: 10/31/18 1037	Received by:	Company: TA Denver	Date/Time: 10/31/18 1037
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
(303) 736-0100

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: Emily Muñoz

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Matt Rohr	Site Contact: ~~Nick Hanrahan~~	Date: 10/31/18	COC No: HDR 1031802
HDR Inc	Tel/Fax: 303-764-537	Lab Contact: Peter Bonczyk	Carrier: Hand-Carry	1 of 1 COCs
1670 Broadway, Suite 3400	Analysis Turnaround Time			Sampler: Emily Muñoz
Denver, CO 80202	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(907) 644-2078 Phone	TAT if different from Below _____			Walk-in Client:
Matt.Rohr@hdrinc.com Email	☐ 2 weeks			Lab Sampling:
Project Name: Xcel Energy GW CCR	☐ 1 week			
Site: VALMONT	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total Dissolved Solids	Total Suspendid Solids	pH, Fluoride, Chloride, Sulfate	Ra226/Ra228 combined	App III - Total Metals: Calcium, Boron	App IV Total Metals (see list)	App III + IV Dissolved Metals	App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, F
MW-17	10/30/18	1235	G	W	1	Y	N	X		X	X	X	X	X	
MW-18	10/30/18	1420	G	W	1	Y	N	X		X	X	X	X	X	
MW-19	10/31/18	0850	G	W	1	Y	N	X		X	X	X	X	X	
MW-20	10/30/18	1550	G	W	1	Y	N	X		X	X	X	X	X	
MW-17D ~~DUP~~	10/30/18	1235	G	W	1	Y	N	X		X	X	X	X	X	
MW-17EB ~~EB~~	10/30/18	1255	G	W	1	Y	N	X		X	X	X	X	X	

10/31/18

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: HDR	Date/Time: 10/31/18 1037	Received by:	Company: TA Denver	Date/Time: 10/31/18 1037
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-460809.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-116391-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/27/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-17 (280-116391-1)	10/30/18	12:35 Mountain		Water			X	X	X	1	
MW-18 (280-116391-2)	10/30/18	14:20 Mountain		Water			X	X	X	1	
MW-19 (280-116391-3)	10/31/18	08:50 Mountain		Water			X	X	X	1	
MW-20 (280-116391-4)	10/30/18	15:50 Mountain		Water			X	X	X	1	
MW-17D (280-116391-5)	10/30/18	12:35 Mountain		Water			X	X	X	1	
MW-17EB (280-116391-6)	10/30/18	12:55 Mountain		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 11-1-2018 1449	Company: TA Den	Received by: Michael Heun	Date/Time: 11/2/18 0900	Company: TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

0.8/1.7

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-460808.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-116391-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 11/23/2018			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Valmont	Project #: 28014379			
Site: Xcel Energy CCR - Valmont Station	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron and Calcium	6020A/FIELD_FLTRD (MOD) 12 Metals	6010C/FIELD_FLTRD (MOD) Copy Analytes	6020A/FIELD_FLTRD (MOD) 13 Metals	7470A/7470A_Prep Mercury - 2/2	7470A/FIELD_FLTRD Mercury - 2/2	534	Total Number of containers	Special Instructions/Note:
			Preservation Code:													
MW-17 (280-116391-1)	10/30/18	12:35 Mountain		Water			X	X	X	X	X	X	X	12/2x500	3	Use Collision Cell
MW-18 (280-116391-2)	10/30/18	14:20 Mountain		Water			X	X	X	X	X	X	X	1	3	Use Collision Cell
MW-19 (280-116391-3)	10/31/18	08:50 Mountain		Water			X	X	X	X	X	X	X	2x500	2	Use Collision Cell
MW-20 (280-116391-4)	10/30/18	15:50 Mountain		Water			X	X	X	X	X	X	X	12/2x500	3	Use Collision Cell
MW-17D (280-116391-5)	10/30/18	12:35 Mountain		Water			X	X	X	X	X	X	X	1	3	Use Collision Cell
MW-17EB (280-116391-6)	10/30/18	12:55 Mountain		Water			X	X	X	X	X	X	X	1	3	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laura Castro	11-1-18 1430	TAL Den		11/2/18 0935	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 280-116391**
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: Terry Burns

Cooler Received on 11/2/18 Opened on 11/2/18

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 0.8 °C Corrected Cooler Temp. 1.7 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-116391-1

Login Number: 116391
List Number: 1
Creator: Lujan, Jacob P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-116391-1

Login Number: 116391
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 11/02/18 01:31 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Valmont

TestAmerica Job ID: 280-116391-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-116391-1	MW-17	104
280-116391-2	MW-18	90.0
280-116391-3	MW-19	82.3
280-116391-4	MW-20	103
280-116391-5	MW-17D	92.6
280-116391-6	MW-17EB	100
LCS 160-399444/1-A	Lab Control Sample	100
MB 160-399444/22-A	Method Blank	97.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-116391-1	MW-17	104	88.2
280-116391-2	MW-18	90.0	84.9
280-116391-3	MW-19	82.3	83.4
280-116391-4	MW-20	103	81.9
280-116391-5	MW-17D	92.6	82.2
280-116391-6	MW-17EB	100	82.2
LCS 160-399455/1-A	Lab Control Sample	100	84.5
MB 160-399455/22-A	Method Blank	97.9	82.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier